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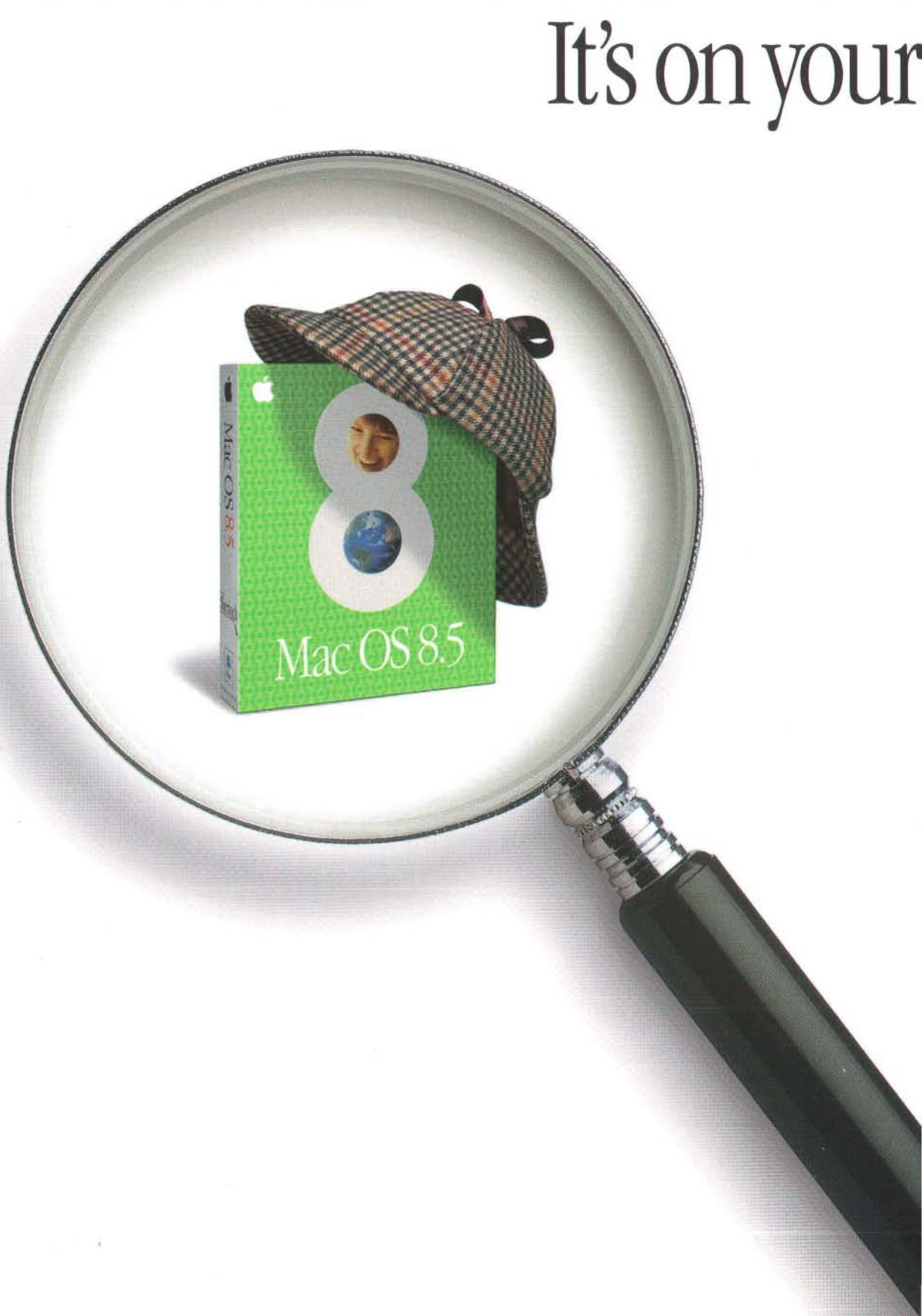
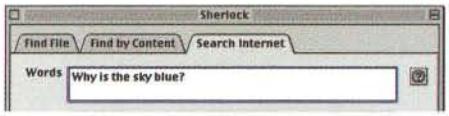


search tool isn't on the Web. Macintosh.

How in the world do you find what you need on an Internet that gets more complex every second? Well, if you have a PowerPC™-based Macintosh, the answer is easy: Upgrade to Mac® OS 8.5 with Sherlock,™ the Internet search detective. Just type in your request—in plain English—and Sherlock unleashes a cadre of the Internet's most powerful search engines simultaneously. In just seconds, the results begin to stream onto your screen, dynamically ranked by relevance. Then, all you have to do is click on any item and off you go. Sherlock starts out powerful, then gets even more powerful—because you can download free "plug-ins" that expand Sherlock's reach to other search engines and all kinds of Internet content, from news centers to retailers. And it doesn't stop with the Internet. Sherlock is so clever in the way it searches, it can also find files that are hidden within your hard disk, by title or by content. So it's easy to locate documents even if you can only remember a key word or phrase. If you're searching for faster and better ways to use your Macintosh computer, stop by and pick up your copy of the new Mac OS 8.5 at an authorized Apple reseller (call 1-800-538-9696 for locations) or visit the Apple Store™ at www.apple.com. For only $99,* it's like putting a powerful new Macintosh inside the Mac you already own.

Sherlock



What in the world are you looking for? Sherlock understands plain, simple English – no need to type in strange symbols.

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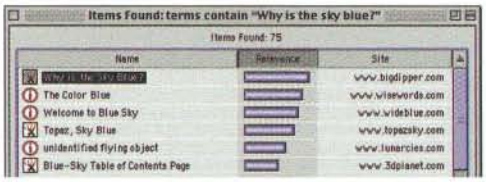

Sherlock unleashes the power of several search engines at once and reports back in seconds—dynamically ranking results by relevance.

Think different.

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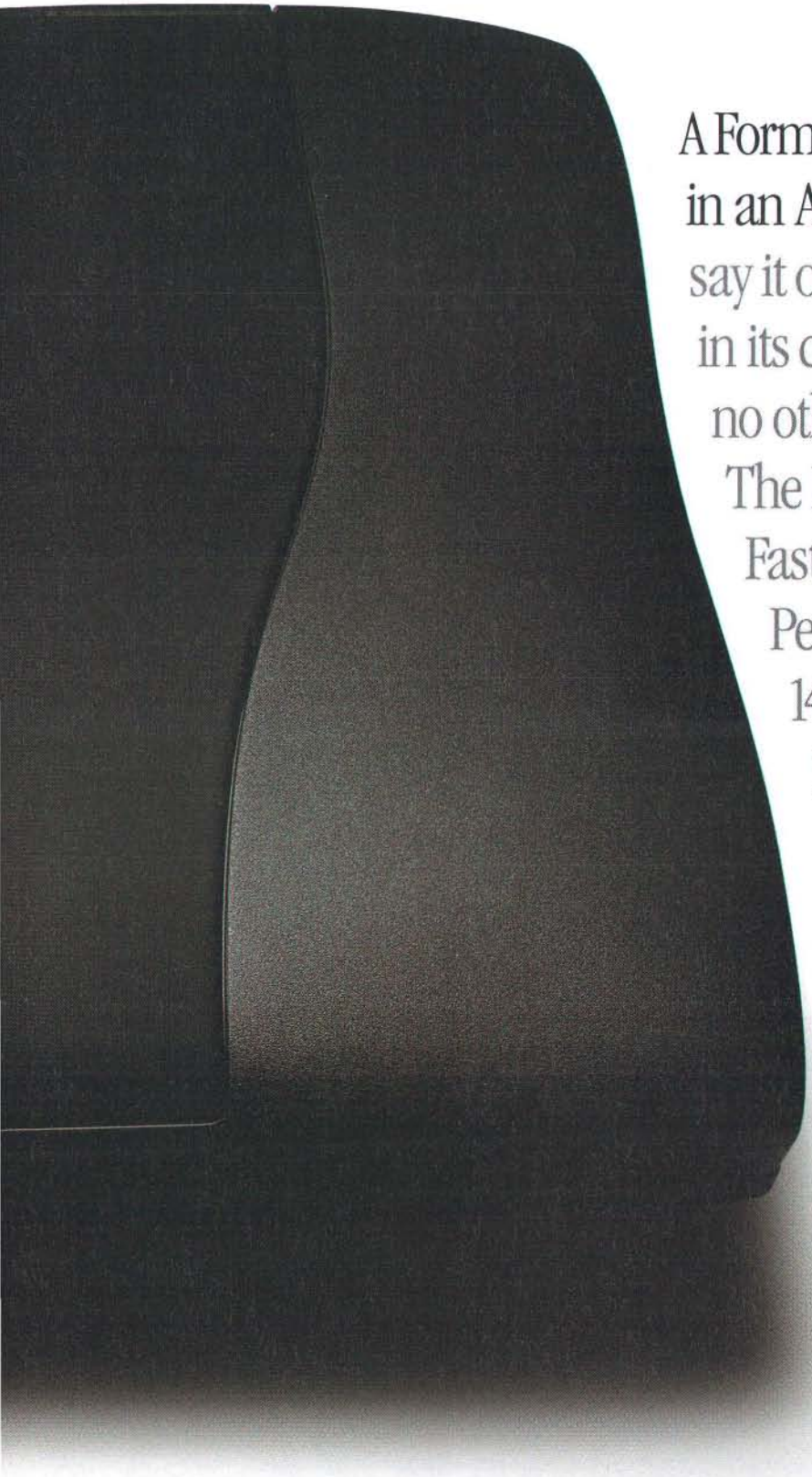

A Formula One race car in an Armani suit. We'd say it outperforms others in its class, but there are no others in its class. The PowerBook™ G3. Faster than any Pentium notebook.* 14.1-inch screen. Fully configured. Starts at $2,799.† www.apple.com.

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WAR ENDS!

PEACEFUL CO-EXISTENCE BEGINS

International Powers Conduct Peaceful Interchange

Computer leaders throughout the industrialized world have agreed to a new convention that makes the *Universal Disk Format* standard on DVD-RAM and DVD-ROM drives, and guarantees "peace in our time" between Mac partisans and allied Wintel forces.

Now Mac citizens can peacefully exchange DVD-RAM disks and files with their Wintel counterparts without fear of data destruction or untimely delays. People can now freely distribute their creativity on disk around the world wihout fear of format conflicts.

Choose the DVD-RAM weapon that works for you

DVD-RAM TuneUp for Mac OS 7 & 8.5

- UDF file system with "Finder like" interface for "drag & drop" file conversion between HFS+ and UDF
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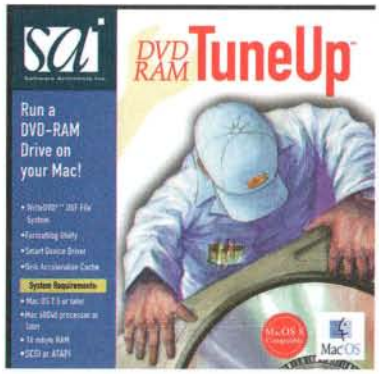

100% Disk Interchange with Win 98 guaranteed!

WriteDVD! for Win 95 & Win 98

- UDF file system with drive letter interface for "drag & drop" file conversion between FAT32 and UDF
- SmartDVD™ device driver automatically configures to the type disk used: DVD-RAM, DVD-ROM, CD-ROM, CD-R, CD-Audio
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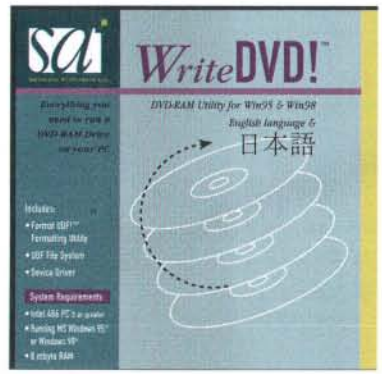

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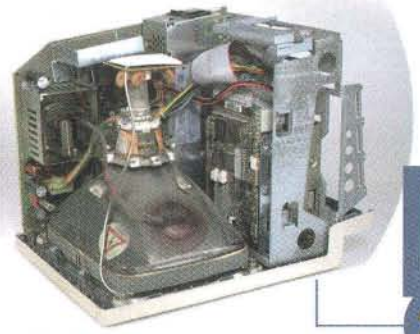

FACE DOWN IN THE GUTTER, the Word mascot remembered Jill.

USE IT AS A DARTBOARD, and you'll incur heaven's wrath!

COW FONTS! THAT'S SO COOL! Next we'll be seeing swine type.

ADAM, IS THAT YOU? Don't shoot! The money's under the mattress.

THE BOUNCE WAS PUT BACK in the step of our spry, young-at-heart Macs by artist Tom White.

JANUARY 1999

Mac ADDICT 29

highlights

24 15th Anniversary Anti-Aging Upgrades

Fifteen and feeling...dusty? Outdated? Unloved? Don't let your Mac act its age. Instead, celebrate the Mac's 15th birthday by giving your machine a new outlook on life. We show you how with more than a decade's worth of upgrades.

BY OWEN W. LINZMAYER

36 Hey Mac, What's Your Sign?

It's no mere pickup line. *MacAddict*'s official astrologer peers into the Mac's birth chart and translates the sign language for some stellar surprises. Find out what the planets have in store for the Mac—and for you!

BY ELIZABETH HAZEL

38 A Greenhorn's Guide to Taming Wild, Wild Web Type

Herding fonts onto the Web can be trickier than taming a two-headed coyote with a tumbleweed. But you'll reign in those unruly fonts in no time after getting a gander at our guide to everything you'd ever want to know about Web fonts.

BY JOHN TOLLETT

how to

76 How to Get Your Image Ready for the Web

GIF, TIFF—what's the diff? We put the *how* in how-to (who put the *to* there, anyway?) with an easy-to-follow guide to using Adobe ImageReady to kick your GIFs and JPEGs up and down the Web. Lots of gritty hands-on stuff—this ain't just book smarts.

BY MARIA LANGER

80 How to Make a Mac Web Server

Propagandize from the sanctuary of your own bedroom. Set up a server to feed the Web a constant stream of your rantings, spoutings, and pictures of your dog. No Unix or butt-ugly NT stations needed. This is all Mac, baby!

BY DAVID REYNOLDS

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Volume 4, Issue 1

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DON'T TELL ME ABOUT THEE, MISTER. I'll whack your knuckles silly!

every month

12 Editor's Note
It's like getting a whole new magazine for only $7.99. Wink. Nudge.

14 Letters
Did we run E. John Swift's letter yet again? Better run and check.

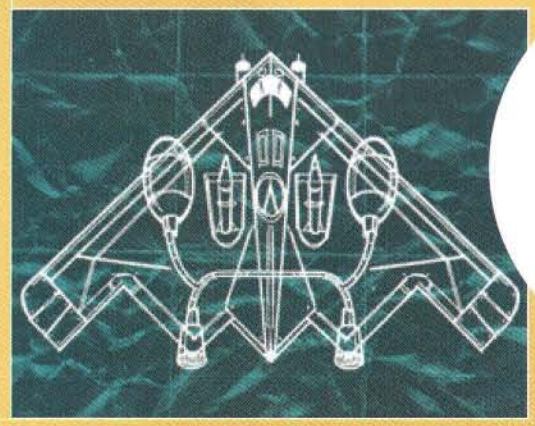
16 Get Info
More! More! We've got the scoop on the G4, plus more on OS 8.5 and Apple's latest rounds of fiscal fidelity. Of course, what *Get Info* would be complete without a tablespoon of marshmallowy, fluffy fun for the kiddies? Not this one. No, sir!

28 Cravings
The best, brightest, and coolest all in one place.

44 Reviews
We were feeling trippy this month, so we reviewed alternative, mind-expanding apps such as Strata StudioPro 2.5.3, Vertigo HotText 1.5, and Lode Runner 2. Then we overdosed on cool Mac hardware—the MacMagic, the Aurora Fuse, and a new silvery, svelte Ricoh digital camera, the RDC-4300. Whoa.

84 Ask Us
Owen Linzmayer knows everything. He'll teach you how to figure out creator codes and mark spam for a trashy death. He'll even teach you how to find answers on your own (not that it's easier than emailing him). If you find your question printed, you win a prize—the answer!

112 Shut Down
New MacAddict Collectibles are already flying off the shelves!



HELLO, INTEL. Motorola is cooking up a little surprise!

THE FAMILIAL RESEMBLANCE is shocking (and kind of gross).

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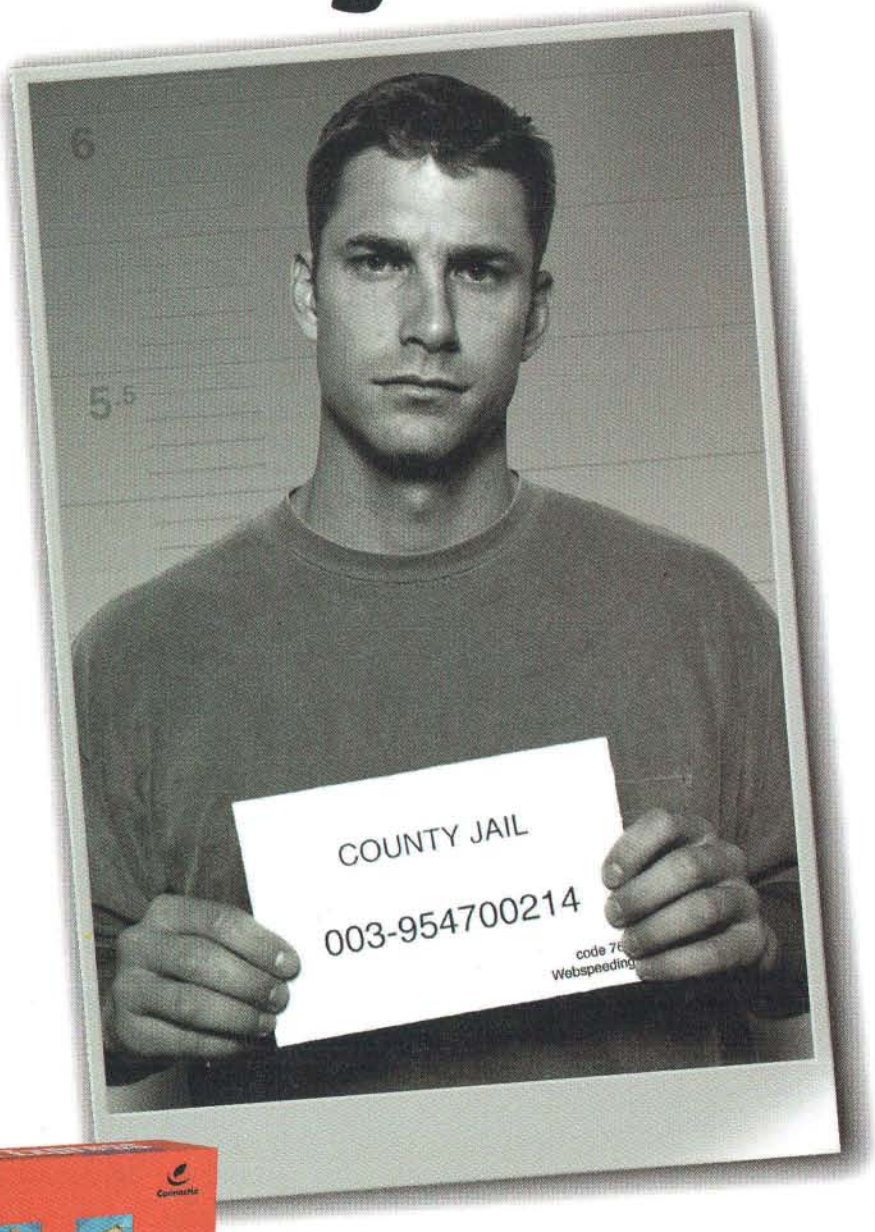
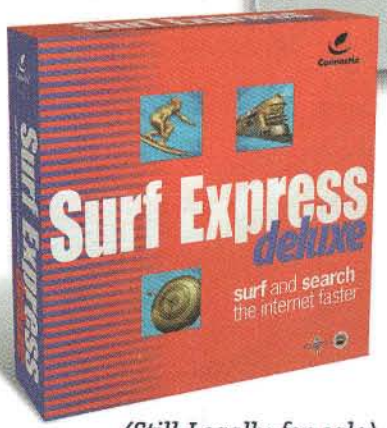
YOU WANT YOUR COAT BACK? THAT'S A BUCK. TIPS AREN'T INCLUDED. IT'S THE FEEL-GOOD MOVIE OF THE YEAR. BY THE WAY, HOW WAS THE MOVIE, ROB?

Busted! for Speeding on the web





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the disc

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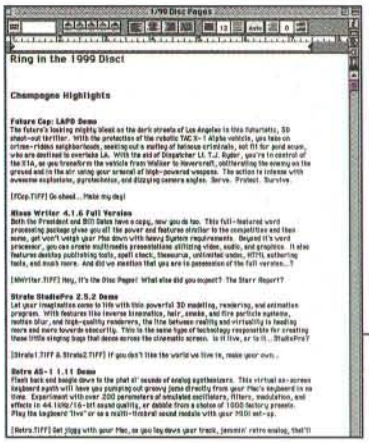
Champagne highlights



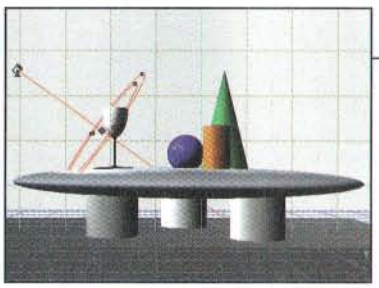
HEY, IT'S THE DISC PAGES! What did you expect? *The Starr Report*?

Future Cop: LAPD Demo

The future looks mighty bleak on the dark streets of Los Angeles in this futuristic, 3D shoot-out thriller. With the protection of the robotic TAC X-1 Alpha vehicle, you take on crime-ridden neighborhoods, seeking out a motley of heinous criminals who are destined to overtake the city. Assisted by dispatcher Lieutenant T.J. Ryder, you control the X-1 Alpha, transforming the vehicle from Walker to Hovercraft and obliterating the enemy on the ground and in the air with your arsenal of high-powered weapons. The action is intense, with awesome explosions, pyrotechnics, and dizzying camera angles. Serve. Protect. Survive.

Nisus Writer 4.1.6—Full Version

Both the President and Bill Gates have a copy of Nisus Writer—now you do, too. This full-featured word processing package gives you all the power and features of the competition and then some, but it won't weigh down your Mac with heavy system requirements. Besides its word processing capabilities, Nisus Writer 4.1.6 allows you to create multimedia presentations using video, audio, and graphics. It also features desktop publishing tools, a spelling checker, a thesaurus, unlimited undos, HTML authoring tools, and much more. Did we mention that you are in possession of the full version?



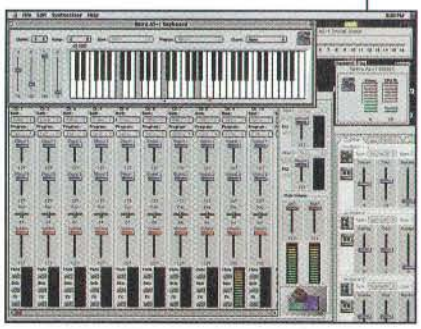
IF YOU DON'T LIKE the world we live in, make your own.

Strata StudioPro 2.5.2 Demo

Let your imagination come to life with this powerful 3D modeling, rendering, and animation program. With features such as inverse kinematics, hair, smoke, and fire particle systems, as well as motion blur and high-quality renderers, the line between reality and virtuality is heading more and more toward obscurity. This is the same type of technology that's responsible for creating those little singing bugs that dance across the cinematic screen. Is it live, or is it...StudioPro?

Retro AS-1 1.1.1 Demo

Flash back and boogie down to the good ol' sounds of analog synthesizers. This virtual onscreen keyboard synth will have you pumping out groovy jams directly from your Mac's keyboard in no time. Experiment with over 200 parameters of emulated oscillators, filters, modulation, and effects in 44.1KHz, 16-bit sound quality, or dabble from a choice of 1,000 factory presets. Play the keyboard "live" or as a multitimbral sound module with your MIDI setup.



GET JIGGY WITH YOUR MAC...as you lay down your track...jammin' retro analog...that'll turn the beat back...

This month's Staff Video, *A Day in the Life*..., was inspired by the many letters we receive inquiring whether we actually *do* anything here at *MacAddict*. Anything?! Take a glimpse at what Nikki, Rob, and Mark will do when prompted with a video camera.

YUMMY. Packing peanuts taste good.

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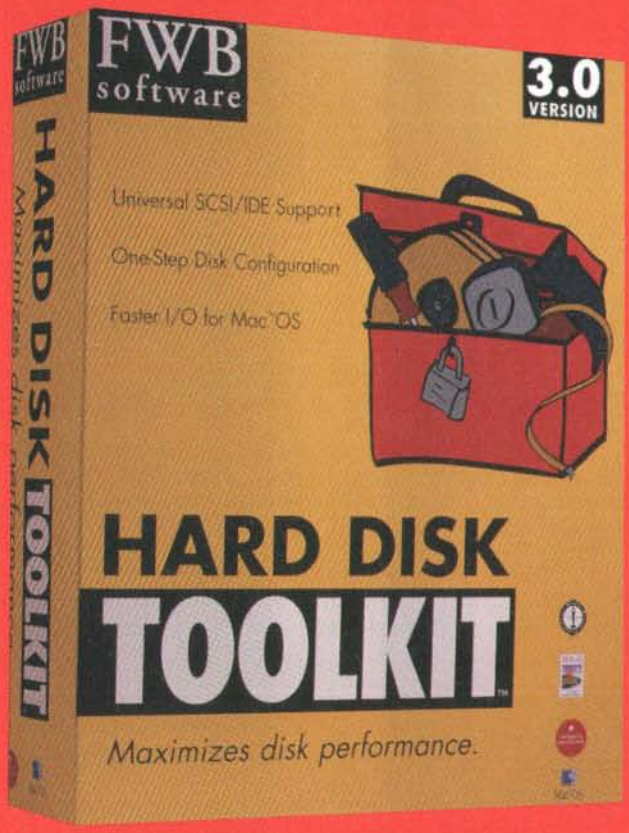

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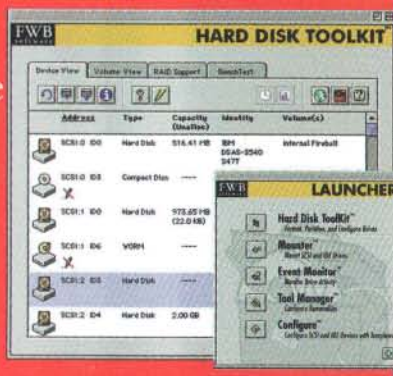

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FWB Software is giving away free software! For a limited time only, purchase Hard Disk ToolKit and receive your choice of the following: Connectix Speed Doubler, RAM Doubler or Surf Express; Dantz Retrospect Express; or Aladdin FlashBack. Hard Disk ToolKit is compatible with Mac OS 8.5 and offers maximum performance and reliability for all your hard drives. For more information visit the FWB site.

Green Dragon—Gridz 1.2
601-473-4225
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In Gridz, you lead an army of ToolBots composed of Workers, Strikers, and Hackers. The enemy ToolBots have taken over NetSpace and you must take it back grid by grid. Build your force of ToolBots and assign duties for each to get through levels and capture the enemy. Learn more about Gridz and other products at the Green Dragon Web site.

Staz Software—Classroom Publisher
800-348-2623
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Classroom Publisher is a desktop publishing program designed with schools, teachers, and students in mind. It allows anyone to quickly and easily create calendars, clip art, greeting cards, and all kinds of reports, banners, and stationery without even picking up a manual! It was written in the world's fastest BASIC compiler—FutureBASIC, also sold by Staz Software. See the Sponsors section on The Disc for more information.

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editor's note

Engineering and marketing meet in Mac OS 8.5.

As I write this, Mac OS 8.5 has been out for a couple of weeks now. Announced with great fanfare during the release of Apple's quarterly financial results, Mac OS 8.5 reveals some things about the new Apple—the company's engineering is good, but its marketing is better.

Consider this: During the official onstage introduction of Mac OS 8.5, those of us in the audience heard how it was like getting a whole new Mac for $99, how Sherlock alone was worth the price, and how Mac OS 8.5 really does make your Mac feel brand new. Sense a theme here? Bingo. Apple says that Mac OS 8.5 is the greatest thing since the Finder.

It's not that Mac OS 8.5 is worthless—far from it. Mac OS 8.5 does have some great features, such as the new look, the faster networking, the better AppleScript, and the smarter search engine. But is it really like getting a whole new Mac for $99? No. Unless you need improved networking, AppleScript, or searching (or you *really* like the great new icons), you probably don't need Mac OS 8.5. And if you're one of the folks who have a 680X0 machine, you can't run it. If you own a Mac clone or use an Apple-branded PC compatibility card, you can probably still use it, but the allure dims—Apple doesn't support those Macs with 8.5.

But that's only half the story. Although it's debatable whether Mac OS 8.5 can hold the title "Greatest Upgrade Ever," Apple doesn't for a second let that message out. Instead, the company is, in every public push, touting Mac OS 8.5 as the finest upgrade ever, which is a good thing, even for those who can't—or won't—use 8.5. It shows that Apple understands the importance of making sure everyone thinks that Apple thinks 8.5 is amazing. After all, if people hear it enough, they're likely to believe there's something to it. And anytime the general public believes Apple has another great technology, every Mac person benefits from the positive mind share.

We're already seeing the results in the popular press. Both *ABC News* and the *New York Times* have published stories about how Apple is fighting back not only with the iMac, but with great software such as Mac OS 8.5. Even *Forbes* is on record saying Apple now has a future as "the little anticompany that could." All that is in part due to the marketing of Mac OS 8.5.

That's why Mac OS 8.5 is a success for all Mac people—not because Mac OS 8.5 is the upgrade to end all upgrades, but because Apple is handling its release and marketing very, very well.—*David Reynolds*

But is it really like getting a whole new Mac for $99? No. Unless you need improved networking, AppleScript, or searching (or you really like the great new icons), you probably don't need Mac OS 8.5.

Marry Me, Rebecca

We recently received an unusual request from one of our readers—he wanted to propose in the pages of our magazine. Being the romantic softies that we are (shh—don't tell anyone), we decided to honor his request. So, without further delay, Michael has something to say:

I love you, Rebecca Lyn Kaplan. Will you marry me?
—*Michael J. McCullough*

Michael and Rebecca met in San Antonio, Texas, while working for the same company, and Rebecca is a big fan of the magazine. We're keeping our fingers crossed, Michael. Let us know what she says. Oh, and send us pictures of the wedding.

CD Trials and Tribulations

Each month, we spend a lot of hours putting together a CD-ROM chock-full of heady Mac goodness for everyone to enjoy. Digital Media Editor Kris Fong gathers only the best shareware and demos (she also films an epic staff video), our CD gurus glue it all together in our new interface (which supports 640 by 480 monitors now, by the way), and we send it out to be duplicated and put into every single magazine. But there are times when that becomes a liability.

As subscribers (and, we hope, folks who buy the magazine at the newsstand) already know, the December edition of the CD-ROM was infected with the D variant of the AutoStart 9805 worm. If you have a Power Mac and the AutoPlay features in your QuickTime Settings control panel are turned on, the worm may have infected your machine. We believe this worm is harmless, as its sole purpose in life is to seek out other versions of the AutoStart worm and replace them with copies of itself. After December 24, 1998, it becomes inactive.

That stinks. We put a lot of hard work into The Disc, and some hacker in Hong Kong releases a bug that attaches itself to our disc. But I'm not bitter, and I hope you aren't, either.

On this month's CD-ROM, we've assembled some antivirus software that will clean up AutoStart worm infections. Please run it on your hard drive to see if you have the infection. If you do, the software will clean it up for you. If not, consider yourself lucky. Either way, open up your QuickTime Settings control panel and turn off the AutoPlay features to protect yourself from the AutoStart worm in the future.

If you're looking for great virus info, please visit the Mac Virus site at http://www.macvirus.com. It's a great place to stay current on what's happening with Mac viruses.

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Blackstone Chronicles
Blood II
Cabela's Big Game Hunter
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letters

Brilliant people often repeat themselves. Brilliant people often repeat…

This Month

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GET ON, GET ACTIVE. Talk to us and to other Mac addicts at the Web site.

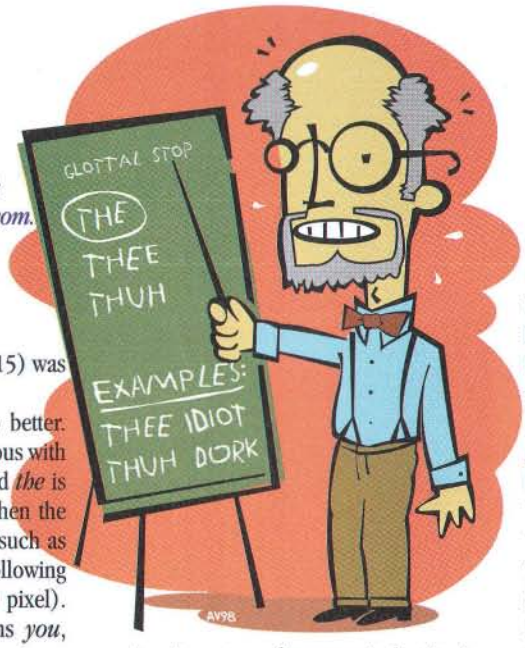

Illustration by Adam Vanderhoof

Thee for Two

Benjamin Pollack's letter (Nov/98, p15) was innocently ignorant.

However, your response was no better. The correct way (generally synonymous with the Mac way) to pronounce the word *the* is as follows: It is pronounced *thee* when the following word starts with a vowel (such as *thee* enamel), and *thuh* when the following word starts with a consonant (*thuh* pixel). *Thee* in Shakespearean lingo means *you*, not *the*.—Aaron Wolf

Benjamin "No Middle Name" Pollack asked you if you pronounce *the* as *thuh* or *thee*, as if it's a regional thing like *car* versus *cab*. Actually, the way most American English speakers do it is so as to avoid a glottal stop (the stop you get when you say "ah-ah-ah-ah" as separate sounds). For example, *a apple* is not allowed because you have to use the harsh glottal stop between the two a's. Instead, you say *an apple* to put in a consonant. Similarly, when a consonant follows *the*, *thuh* is used, but when a vowel follows it, you use *thee*. It is *thuh ball*, but *thee apple*.—Richard Adams

We're Sorry, We're Sorry

Upon opening up the November issue of *MacAddict* and turning to the letters, I noticed something eerily familiar about the first letter from E. John Swift. Hmmm...I can't quite put my finger on it, but it gives me a creepy sense of déjà vu.

Upon opening up the November issue of *MacAddict* and turning to the letters, I noticed something eerily familiar about the first letter from E. John Swift. Hmmm...I can't quite put my finger on it, but it gives me a creepy sense of déjà vu.

Well, you get the point.—Eric Kringle

When I first started reading your letters this month, a heady sense of déjà vu swept over me. Cracking open my trusty last month's issue (after removing it from the shrine), sure enough, there it was—the same letter from Mr. Swift. At first, I must admit, I thought it was an oversight on your part. But knowing what a progressive, avant-garde publication you are, I immediately realized that I had stumbled onto your first forays into a brave new technology: SurroundAddict! By cleverly placing the issues next to each other and calibrating my eyes with the two letters from Swift, I can now read both issues at once! What fun! I don't suppose you guys would mind sending me a 21-inch ColorSync display so I can try this with your Web site, would you?—Brian Knipp

You'll Love the Jell-O

Haha heehee hoho haha hee. They're coming to take me away haha to the PC farm where stuff is crashing all the time and basket weavers sit and play with their thumbs and windows, and they're coming to take me away haha heehee hoho, oh crap I'm going to Microsoft.—Jordan (I'm going nuts) Paul

Puns, Gotta Love 'em

I know I do.

Here's a few more for you:

Photoshop until you drop
Rank and FileMaker
Power Mac corrupts, G3 Power Mac corrupts absolutely

Movies

I am Curious (Yellow Box)

Music

"If I Had an FWB Hammer"
"RAMalama Ding Dong"
The Rolling Whetstones
ZZ Desktop
Mike and the MacAddicts

Books and Literature

Cache 22
Click and Dragtime by E.L. Doctorow

Advertising

I can't believe I 8.1 the whole thing
Let Megahertz put you in the driver's seat
Apple: made from the best stuff on Earth
Gee. No, G3—Dwight Allen

The person who wrote that list of Mac puns should be punished by being locked in a punitentiary, especially for leaving out the one about James Bondi.—Scott Konzem

You missed the most obvious movie pun: *The Wizard of Woz*.—Peter Duddington

They Moooved

Who cares where all the cowboys have gone? What about the *cows?*—Jim Rodovich

How About the Salsa?

I am happy to inform you that Apple has fixed the "Potato Chip Monitor" bug. I read in the *Letters* section of a previous issue (Jun/98, p12) that a reader had discovered a bug in Apple monitors. It seems that when you eat potato chips from across

the room, the screen on your monitor gets all wobbly (yes, that's the technical description). I am thrilled to report that Apple has fixed the problem. The iMac's monitor is tortilla-proof from up to 30 feet.—Tim Conner

That's a Good Excuse

The flight simulator ad on page 30 and 31 of your November issue is a hoot. Fly by Terminal Reality boasts an "actual cockpit and runway screenshot." The runway picture shows the airplane lined up for landing on a westbound runway. The cockpit instruments, however (unless they are broken, and badly so), show an eastbound airplane in a diving right turn (losing about 2,000 feet per minute), going about 173 miles per hour. If Terminal Reality owned the patent on reality, we would all be in big trouble. Oh, sorry, this is probabl the Windows version.—Rich Setterberg

It's on the Fly

Maybe I'm special, but in my September issue in the *MacAddict Index*, there was a fly squashed between the pages. Maybe you guys need me to send you some fly tape? Do you think this qualifies me for a replacement issue?—Neil Sjostrom

Start Charging Rent

Bill Gates is living under my bed! What should I do?—Derek Moss

You Know You're a MacAddict When...

...you can recognize old letters without opening an old issue.
—Paula Wade

...you screen your daughter's boyfriends by their opinion of Apple.
...you go into magazine shops just to move a copy of *MacAddict* from the back of the rack to the *front*, preferably covering the latest edition of *101 Windows Secrets* magazine.
...your daughter warns her boyfriends ahead of time to tell you they are thinking about buying a Mac.
—Patrick "MacOSkey" McCloskey

...you now bleed in crystal or Bondi Blue.
...while watching a movie backwards, you can't shake the feeling that Steve Jobs is chanting "I buried Gil."
...you use AppleScript on your alarm clock, coffee pot, toaster, elevator car, and so on.
...you fail an exam by quoting Descartes as "I think, therefore iMac" and don't understand why you're mistaken.
—James Klugman

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get info

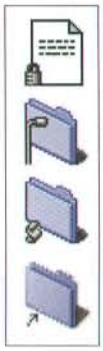
The G4, FireWire and AGP, Apple's latest financial triumph—what more do you want?

Exploring 8.5

We go spelunking about in Mac OS 8.5's cavernous mines

Illustration by Lloyd Dangle

What major Mac OS evaluation would be complete without some digging through the relevant technical material to unearth some obscure gems? None, of course, so we donned hardhats and headlamps and dug in. Some of the material we came up with was sheer gold, and some was iron pyrite (useful, maybe, but not very valuable on the open market). Here are five of the best new technical tidbits in Mac OS 8.5.



◀ **Icon badging**—When Mac OS 8.5 modifies an icon—such as the arrow appearing on an alias—it doesn't just change the icon's bits with a new drawing. Instead, it adds an icon badge on top, which lets all kinds of new and interesting things happen, such as adding a lock badge to locked files, a network wire badge to shared folders, and an AppleScript badge to folders with attached scripts.

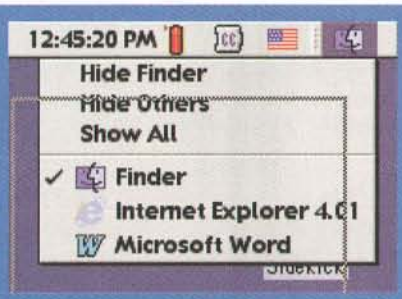
• **More PowerPC code**—The Mac OS is PowerPC only (a problem for millions of 680X0 users), and Apple added even more PowerPC code to boot. It doesn't speed things up tremendously (most of the emulated parts of the Mac OS were already pretty efficient), but it does keep Apple from having to maintain both 680X0 and PowerPC versions of the OS code—the OS is now quicker and easier to update.

• **Adopting TrueType**—Until Mac OS 8.5, the system chose bitmap fonts over TrueType fonts for screen display. After all, the bitmap fonts were already predrawn, and the Mac OS didn't have to spend any time calculating how to draw fonts. Now, with antialiased type in Mac OS 8.5, the system chooses TrueType fonts first, simply because bitmapped fonts can't be antialiased. It may be time to move your fonts over to TrueType versions, unless you need the PostScript-bitmap combination for graphics and printing.

• **Faster network copying**—One of Mac OS 8.5's most touted features is its ability to copy files quickly over a network. This is largely due to a new Ethernet driver (entirely PowerPC native, and it replaces a slew of older Ethernet-related files) and modified Finder file copy code.

• **New Control Strip**—Mac OS 8.5 reimplements Control Strip 2.0 as an application, which allows you to install or uninstall new modules by simply dragging them onto the Control Strip, or rearrange existing modules by Option-dragging them. Of course, such a big change may result in breakage of some Control Strip items under Mac OS 8.5, but so far we don't know of any problems.—*DR*

App Switcher



New in Mac OS 8.5, the Application Switcher—a faceless background application—lets you switch between applications with a mere Command-Tab. This application also maintains a small floating window (which you can tear off the application menu) that lists all running apps. If you don't like the size or shape of that window, you can change it. There are also a couple of shareware apps, such as Switcheroo, that will do this kind of configuration for you.—*DR*

To resize the window, move the cursor to the right edge of the window until it changes to the column resize cursor. Click and drag the edge of the window to the desired size.

To toggle between small and large icons, Option-click the zoom box in the upper right corner of the window.

To toggle between vertical and horizontal orientations, Shift-Option-click the zoom box in the upper right corner of the window.

Building a Better Business

Apple keeps the black ink flowing

The latest financial results from Cupertino contained few surprises—and those few were all pleasant. Wrapping up its best year since 1995, Apple Computer turned in another $100 million quarter and ended fiscal year 1998 solidly in the black. During its fourth fiscal quarter (roughly covering the months of July through September), Apple brought in $1.56 billion in sales and walked away with a $106 million profit, yielding a profit of $309 million for the year. The company has also added almost a billion bucks to its cash supply since 1997, and is now sitting on $2.3 billion in cash and short-term investments.

Looking at the numbers, it seems that Apple may finally have broken its pattern of declining income. Traditionally, the company's revenues have dipped during the first two quarters, then rebounded with fall's back-to-school sales—a rebound that failed to materialize in 1996 and 1997. This year the final quarter's income was pretty much in line with the first quarter's high-water mark, and down less than 4 percent from the same quarter last year, indicating that Apple's income may finally have stabilized. And thanks to the splashy iMac intro, Apple's unit sales jumped to 834,000 units—up 28 percent from the same period last year, almost enough to offset the ongoing decline in selling price. We can look forward to even bigger increases during this shopping-intensive quarter.

Despite the introduction of the consumer-oriented iMac, Apple also wrung out gross margins of 26.8 percent, another three-year record. Chief Financial Officer Fred Anderson attributes the high margins in part to better inventory management—now that Apple is no longer building up huge stockpiles of purchased parts and warehousing hundreds of thousands of Macs, it can save storage costs and take advantage of component price drops.

Indeed, Apple's efforts to reduce inventory have been nothing less than heroic. From the first to the last quarter of the year, the company's inventory dropped from $400 to $78 million (see the "Apple Rethinks Its Inventory" chart). If you measure it in days, the company trimmed inventory from 30 to 6 days' worth—meaning that Apple is now replenishing dealers' shelves every week rather than every month. In announcing the good news, interim CEO Steve Jobs pointed out that Apple has edged out the famously lean-and-mean Dell Computer in this area; the latest figures from Apple's newly anointed archrival have it carrying 8 days' worth of inventory. "Apple," said Jobs, "is regaining operational excellence."—*MS*

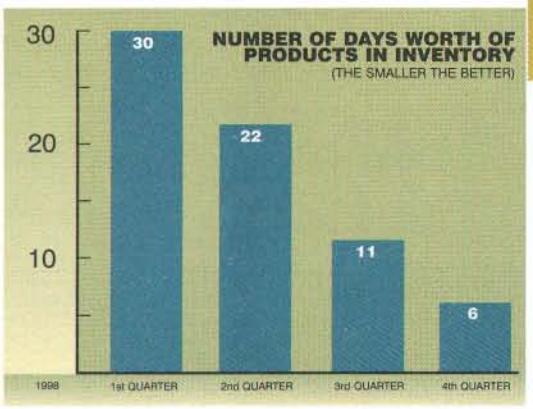
iMac iMproved

During its first fiscal quarter, Apple shipped 278,000 iMacs—one third of all its unit sales, all the more impressive given that Apple didn't release the iMac until the second half of the quarter. To bolster its grand foray into the consumer market, the company has slightly revamped the iMac, started a financing program for the little bugger, and added the 300-store Best Buy chain as an alternate venue for iMac distribution.

The iMac now ships with an updated ATI Rage Pro graphics accelerator chip instead of the older Rage IIc, includes Adobe PageMill 3.0 with the software bundle, features hardware restart capability from the front power button, and, of course, comes with Mac OS 8.5. Early iMac buyers are stuck when it comes to the new chip and PageMill, but Apple will upgrade them to OS 8.5 for a discounted $19.99 (as it will for anyone who bought a G3 within 30 days of OS 8.5's release). People looking to pick up an iMac can now do so for $29.99 a month, with no money down, via Apple's 64-month financing scheme (you can pay off the remaining portion at any time). Under this program, you pay a total of $1,919.36 for your iMac. But still, as Steve Jobs cleverly quipped in Apple's press release, it only costs about as much as two pizzas per month. Just think, under economics of that sort, a fully equipped G3 tower sells for a stunning 267 pizzas. Apple, of course, still only accepts dollars.—MS

Apple Rethinks Its Inventory

One measure of Apple's increased efficiency is the speed with which it's been refreshing its product inventory. While Apple once took a month to clear out its stockpiled wares and replace them with new stock, it now has the time lag under a week.



Evenly Matched Opponents, or a Savage Beating?

In his latest address to the Mac populace, Steve Jobs once again dragged Dell Computer out to play the bad guy. While previous efforts to target the massive PC manufacturer seemed to us like a sell-out attempt to take the heat off now-business-partner Bill Gates, this time we figured what the heck, why not a new villain? So we took a quick look at CEO Michael Dell to see if he's a worthwhile adversary for Jobs.—*RC*

STEVE JOBS vs. MICHAEL DELL

JOB: Chair and CEO, Pixar; interim CEO, Apple Computer.

NUMBER OF COMPANIES CURRENTLY IN CHARGE OF: 2

FAVORITE COLOR: Bondi blue and Ice

LATEST CONTRIBUTION TO THE MAC: iMac

DIET: Vegan.

FAVORITE OUTFIT: Black turtleneck and jeans.

MOST RECENT ACCOMPLISHMENT: Introduced the world to the iMac.

LIFETIME ACCOMPLISHMENT: Cofounded Apple Computer.

JOB: CEO, Dell Computer

NUMBER OF COMPANIES CURRENTLY IN CHARGE OF: 1

FAVORITE COLOR: Beige

LATEST CONTRIBUTION TO THE MAC: Nothing

DIET: The blood of the working class.

FAVORITE OUTFIT: Underoos? Oh, wait, that's us.

MOST RECENT ACCOMPLISHMENT: Appearing in our *Get Info* section.

LIFETIME ACCOMPLISHMENT: Mentioned in a Steve Jobs keynote! Ooohhh!

Top Secret G4

We got a sneak peek at the next PowerPC

Motorola's next PowerPC chip (cleverly named the G4) surfaced this month, and our field agents mocked up a blueprint of what the latest information tells us. Apple has yet to confirm when or if it will pop these powerhouses into desktop machines, but we're guessing it'll let them out of Area 51 in Cupertino in the first half of 1999.—*RC*

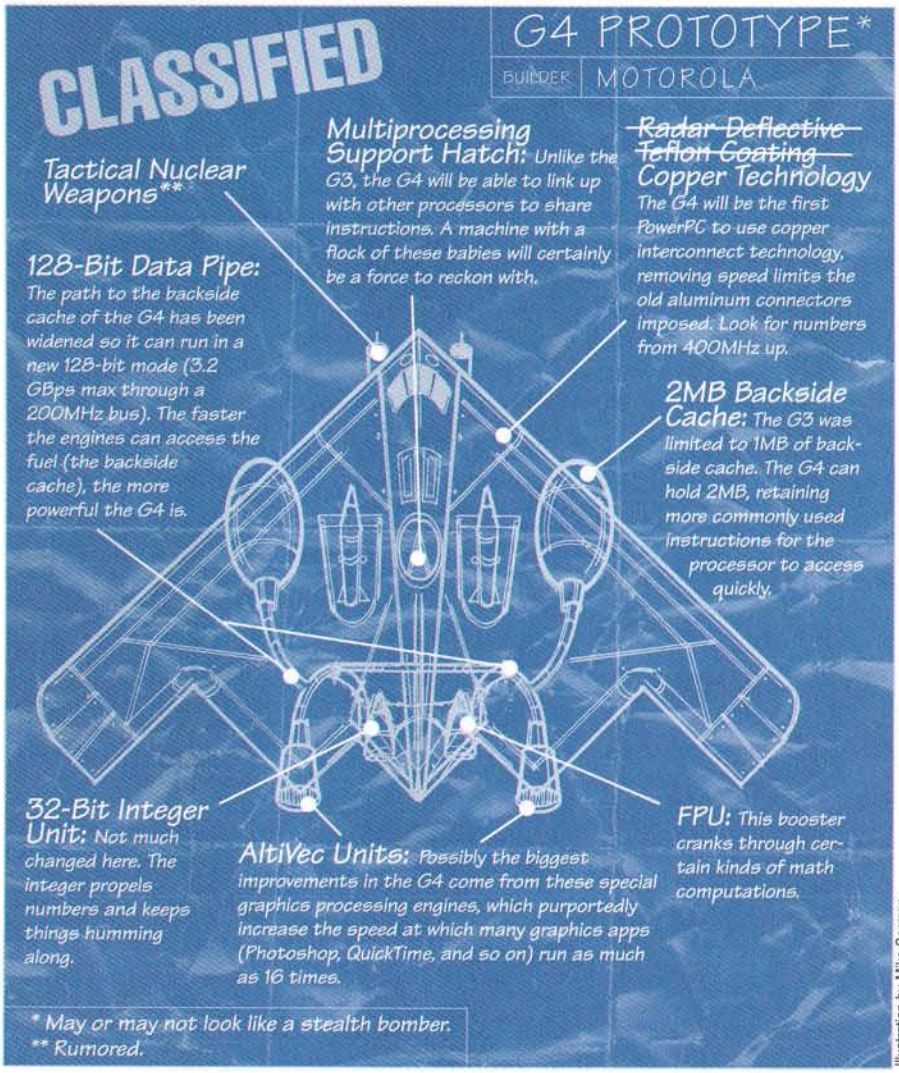


Illustration by Mike Gorman

Where Do Macs Come From?

Most Macs come from one of three Apple manufacturing facilities: Sacramento, Calif.; Cork, Ireland; or Singapore. (Apple sold off a fourth plant in Fountain, Colo., in 1996.) As Mac Evolution (http://www.macevolution.com) explains, a Mac's serial number reveals its origins. Those starting with *XA* or *XB* were made in Sacramento, *SG* in Singapore, *CK* in Cork, and *FC* in Fountain.—*MS*

Port Authority

Caught unawares by USB? Flustered by FireWire? Apathetic about AGP? Here's a peek at the peripheral interfaces slated for future Macs. While we won't be scuttling our serial ports and breaking our SCSI chains overnight, these flashy new technologies will be coming to your desktop sooner than you might think.

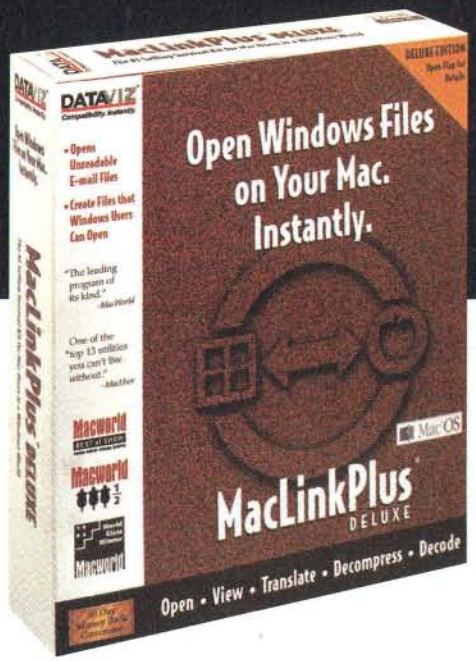
Universal Serial Bus: First introduced on the iMac, USB will soon become the standard interface for low-end peripherals. Not only does it allow you to plug in mice, keyboards, and printers, but it usurps some of the less-demanding tasks of SCSI. Though its throughput is slower than SCSI, USB is adequate for low-end peripherals.

FireWire: Developed (and long neglected) by Apple, this interface is known as IEEE 1394 to the rest of the world (FireWire is an Apple trademark). Originally created for digital video applications, FireWire is also being positioned as a midrange solution for scanners, as well as storage devices with bandwidth requirements USB can't meet.

Ultra2 SCSI: In the new scheme of things, USB and FireWire will meet most of your peripheral needs. Only the fastest, most powerful form of SCSI will survive, devoted almost exclusively to hooking up high-performance hard disks.

Accelerated Graphics Port: Based on the PCI standard, AGP is a dedicated graphics interface from Intel. In addition to higher bus speeds—starting at 66MHz, and available in double- and quad-speed multiples as well—AGP allows a graphics card to store 3D resources.—*MS*

Surviving in a Windows world just got easier.



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Millennium Mod

Is your culture Year 2000–safe?

No, we're not talking about yogurt—we mean pop culture. While highly paid consultants rack up billable hours, and mothballed Fortran programmers are dusted off to perform emergency updates to antiquated mainframe programs, nobody's been keeping an eye out for the silent victims of this looming crisis: movies, songs, television series, and other cultural artifacts. Will The Artist Formerly Known as Prince still be able to "party like it's 1999" in the year 2000? And even those that survive the turn of the millennium may still face obsolescence the following year unless they follow the example of the former Gateway 2000 (now just plain Gateway). Here's our shortlist of pop-culture priorities, plus a watch list for others that will expire in the years to come.—*MS*

Not Year 2000 Compliant

Space 1999
If Moonbase Alpha doesn't blow on schedule, this '70s Star Trek wannabe will be a bust...again.

The Y2K Crisis
Consultants will see fat fees evaporate, mainframe programmers will go back into cold storage to await the Y10K debacle.

20th Century Fox
This venerable movie studio needs a name change to ring in the new era. Searchlights are kind of passé, too.

20th Century Insurance Company
The name conjures up an alarming spectacle of policies self-destructing on December 31.

This Article
Won't seem so funny once the clock ticks over. Ah, the hazards of topical humor.

On the Watch List

Blues Brothers 2000
Jake and Elwood reunion wasn't so hot in '98; it will be positively cold in the first year after the Y2K crunch.

Death Race 2000
Where's my souped-up granny-munching highway cruiser? Filed under postapocalyptic scenarios that didn't pan out.

President Bill Clinton
Even if the commander-in-chief makes it through the Starr gauntlet, by 2001 we'll have another pol in the Oval Office.

2001: A Space Odyssey
Alien monoliths have three more years to make their entrance before sci-fi classic goes into discard pile.

Mystery Science Theater 3000
Brand name is likely to outlive fad for snickering at B-movies.

Hey You Sissies!

Want to win a graphics accelerator card? Better practice

Been playing Myth, Unreal, or Tomb Raider II without 3D acceleration? Are those giant pixels driving you nuts? Have you been trying to save money for that awesome gaming card, but keep spending it all on more games? Here's your chance to win a 3D accelerator that rocks, with 2D to go. All you gotta do is beat me, Reviews Editor Jennifer Ho, and you win VillageTronic's Mac Picasso with 3D Overdrive—a double whammy starring 3Dfx Interactive's fearsome Voodoo chip set. 3D Overdrive accelerates Glide and RAVE games, so you can play them in their full polygonal glory! If you think you've got what it takes, send your email address, name, and phone number to contest@macaddict.com. Entrants will be randomly selected for the ultimate online Myth dwarven football slugfest. Four finalists take me on for the prize.—*JH*

The MacAddict Index

Number of iMacs sold during the first 42 days of availability: 278,000

Average number of iMacs sold per day during this period: 6,620

Number of iMacs sold in Japan during the first 48 days of availability: 40,000[1]

Average number of iMacs sold in Japan per day during this period: 830

Estimated number of Compaq computers sold in the United States per day during the third calendar quarter of 1998: 16,500[2]

FOCUS ON: SILENT CRISIS!

Estimated amount businesses worldwide will spend to deal with the introduction of the euro currency: $145 billion[2]

Number of fonts to which Apple added the euro currency symbol in Mac OS 8.5: 18

Percentage of European business leaders who, in an NOP Research survey, were able to identify the euro in a lineup of symbols: 62%[3]

FOCUS ON: WHY THE WEB SUCKS!

Chance that users were able to find specific items of information on a sampling of large commercial Web sites: 42%[4]

Number of Web shoppers who give up looking for the item they wanted to purchase: 62%[5]

Estimated portion of potential online sales lost due to inability of users to find products: 50%[6]

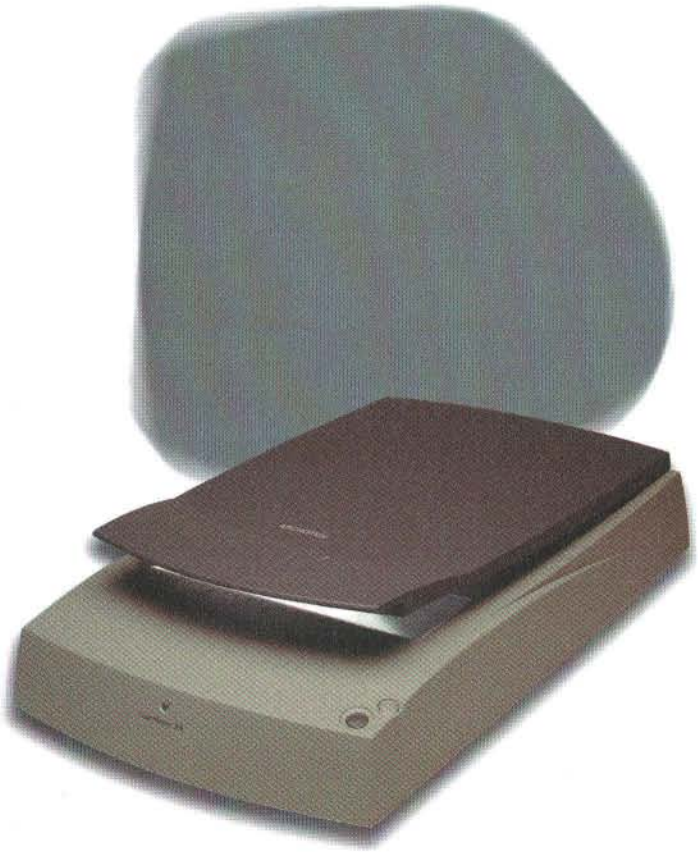
FOCUS ON: OUCH, THAT HURTS!

Amount for which Harris Corporation is suing Apple Computer to compensate for lost Newton licensing business: $17 million[7]

Number of hours Microsoft CEO Bill Gates spent rocking back and forth during a 1992 deposition to the Federal Trade Commission: 9[8]

1 Source: Reuters; 2 Source: International Data Corporation; 3 Source: Microsoft;4 Source: *Web Site Usability: A Designer's Guide*, by Jared M. Spool et al; 5 Source: Zona Research; 6 Source: Forrester Research; 7 Source: *San Jose Mercury News*; 8 Source: *Washington Post*

I like iMac.



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cravings

Five of the freshest faves to tempt you in the New Year.

1600SW Flat Panel Monitor

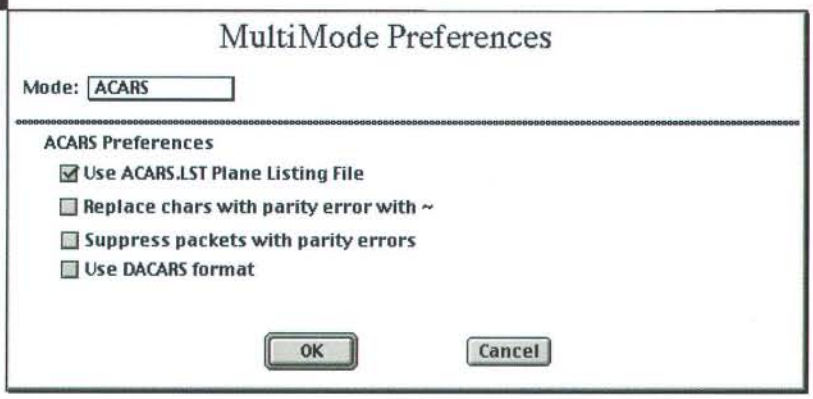
Silicon Graphics

A MIGHTY MONITOR TO MEET THE MILLENNIUM.

Let's face it—when the year 2000 hits and the world goes to hell in a handbasket, you're going to need some protection, preferably some mighty big, flat, wide protection. Something you could hide behind, perhaps. The Silicon Graphics 1600SW Flat Panel Monitor fits the bill. With its wide 17.3-inch display area (capable of displaying up to 1,600 by 1,024 resolution), the 1600SW is plenty big enough to give you cover during even the most apocalyptic of times. And with its ultra-fine dot pitch—equivalent to 110 dpi—and ability to handle video at 30 fps (not to mention its fantastic industrial design), the 1600SW will be beautiful to look at—until the power goes out all over the world, that is. Then you can just curl up behind it and sleep with one eye open. But you'd better hope that things hold up until the first quarter of 1999, because that's when the 1600SW will be made available to the masses for a mere $2,795. Just contact Silicon Graphics at 800-800-7441 or 650-933-1980, or point your Web browser to http://www.sgi.com for more information.—DR

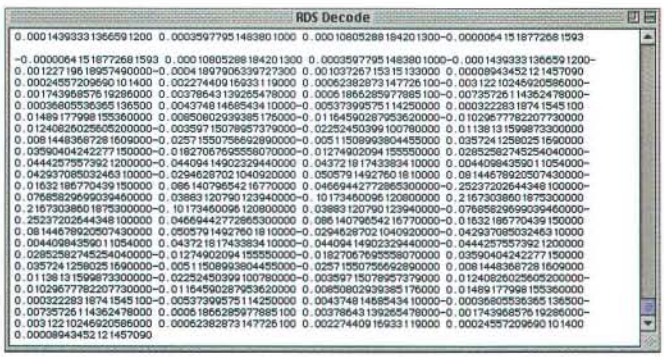
MultiMode 1.1.0

Chris Smolinski



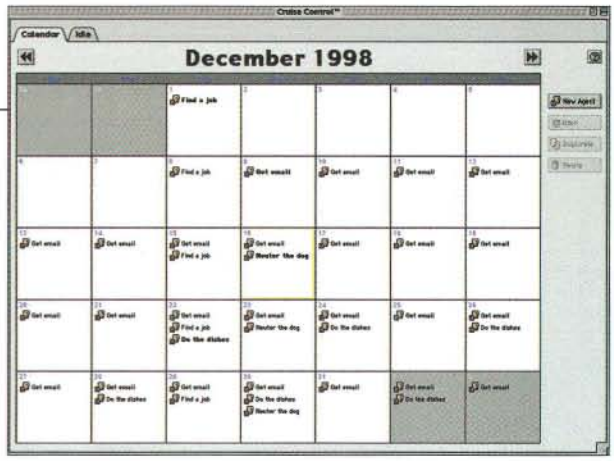
BRING THE AIRWAVES TO YOUR MAC.

Enough about the revolution already, huh? Not a chance. It's coming—haven't you seen the messages on all of the yield signs around Albuquerque? And when it does, the first thing to go will be phone lines and the Internet. But some of us will still be able to connect to the outside world with our Macs, thanks to shortwave radio and MultiMode 1.1.0. This nifty little utility uses the audio-in port on your Mac, so it can receive and decode Morse code, radio teletype (both standard and marine), weather facsimile, aircraft communications, time station decoding, and several other nonvoice communications you hear on shortwave radio—and all for a mere $25 shareware fee. If you have shortwave capability, you owe it to yourself to get this utility—before the black helicopters find you. Just point your browser to http://www.access.digex.net/~cps/sss14.html.—DR



Cruise Control

Walnut Systems

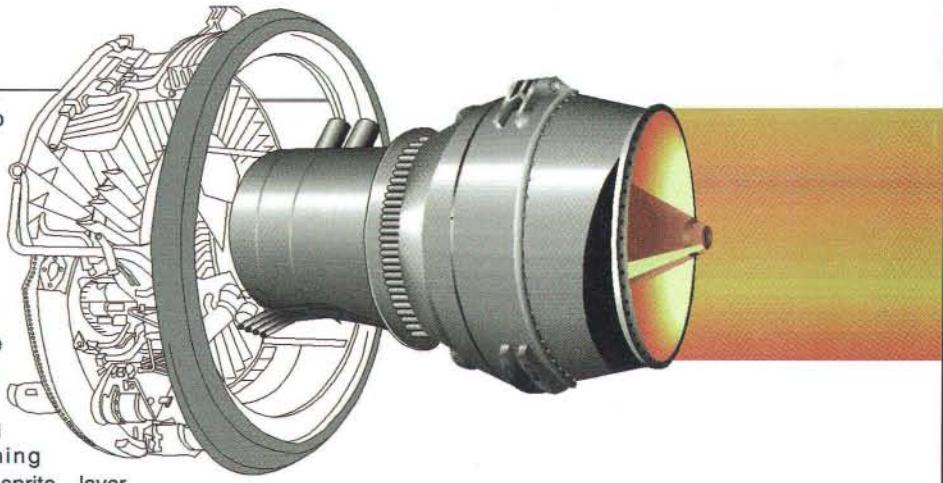


Remember that long cross-country trip that you took with your parents in the fat '73 Cadillac? Your dad, on a dare, set the Caddy's cruise control to 95 and took a slight right turn at Wendover, Nevada, onto the Utah salt flats, and like the proverbial monkey-navigated rocket sled, you flew into the night with your father sleeping on the back seat. Mmm. Good times. Now you can recapture those childhood moments (without the part where you're screaming and reaching over the seat for the wheel) with Cruise Control from Walnut Systems. Cruise Control, which should be available for $99 as you read this, is an all-in-one Mac control center. Its interface, which looks like a calendar, lets you schedule your Mac to do just about anything, anytime. Use it to do backups and maintenance while you're away and to fetch your email for you in the morning—all without you lifting a finger, you lazy dickens. For more information or to download a copy, go to http://www.walnutsys.com.—DR

AUTOMATIC MAC ACTION.

Canvas 6

Deneba



That Superman thinks he's so hot. It's not the invulnerability or the flying (although those are pretty cool)—it's the X-ray vision that gets your goat. How irresponsible can you be, flashing people with more radiation than a chest X-ray in a mere glance? Somebody ought to put a stop to it, or at least come up with a better way to see through things. The good folks at Deneba have given it their best shot with the newest version of Canvas. Featuring something called sprite layer technology, Canvas can create transparency in vector-based images using gradients or bitmaps as a guide. Superman schmuperman, I say. Canvas 6 also includes multiple master layers for easy creation of complex documents, on-the-fly spelling checks, a built-in virtual memory scheme to handle vector drawing, and speedy redrawing of vector effects. So how much does it cost to get your hands on the power of the 'man? Just $375. Call Deneba at 305-596-5644 or go to http://www.deneba.com for more information.—DR

SEE THROUGH THE WORLD YOU CREATE.

PL-400 LCD Pen Tablet

Wacom Technology

When the Mac first burst on the scene with its digital windows (which some unnamed Redmond behemoth later copied), the metaphor was clear—here was an exciting new way to look into your Mac's contents. Move the mouse, and the pointer on the screen could move stuff in the window. Well, Wacom has done the Mac window-mouse combo one better with its new PL-400 LCD Pen Tablet. This combination drawing tablet and LCD panel measures 13.7 by 11.7 inches with a 13.3-inch active-matrix TFT display capable of 1,024 by 768 resolution. If you want to draw, you simply touch the screen with the Wacom pen, and it works just like a drawing tablet—with 256 levels of pressure sensitivity and a 1,016-line-per-inch pen recognition resolution. The Wacom tablet comes complete with a PCI video card, so you won't have to give up your primary monitor. Be prepared to plunk down a large chunk of change, though—the PL-400 runs $2,999.99. For more information, contact Wacom at 800-922-9348 or go to http://www.wacom.com.—DR

A WINDOW ON YOUR MAC'S WORLD.

15th Anniversary

Anti-Aging Upgrades

BY OWEN W. LINZMAYER

PHOTOS BY AARON LAUER

Checking the List

To make the most of your Mac, focus on the areas designed for maximum upgrade payback.

RAM: Right now RAM is cheap, so buy as much as you can. You need at least 32MB to run Mac OS 8.5.

VRAM: It usually won't give you a speed boost, but it lets you see more colors at greater resolutions. On smaller monitors, 2MB is sufficient to display millions of colors.

CPU: The best thing you can do to increase overall system performance is upgrade your central processing unit. But it's also the most expensive thing you can do.

FPU: Many older Macs lack an FPU (floating-point unit), which performs certain math functions much faster than the general-purpose CPU, and is required by some spreadsheet, 3D, and graphics programs.

FLOPPY DRIVES: Don't replace your floppy drive unless it's dead, in which case replace it with one of the same model (newer drives lack the auto-inject feature).

HARD DRIVES: Built-in hard drives are fair game for upgrading. If you swap out an existing drive, replace it with one of the same physical dimensions and bus type, but with more storage space or a greater transfer rate.

SLOTS: Whether they're PDS, NuBus, or PCI, slots let you expand your Mac by plugging in cards. Many people never insert anything into their available slots, but if you ever need to add an Ethernet or video card, for example, this is where you do it.

SOFTWARE: One barrier to keeping an old Mac running like new is locating software whose requirements match your Mac. Check out The Disc for our software gift pack—guaranteed to run on almost any machine.

The Mac turns 15 years old this month, and to help the old geezer kick up its heels and celebrate we decided to give the machine more than a decade's worth of upgrades. So, if you have a Mac that's just gathering dust, pull it out of the closet. If your friend is about to toss an old Mac because the hard drive crashed, rescue it from the trash heap. And if the Mac you use every day gets the job done, but slooooowly, read on. It's party time.

We picked a delegation of 10 Macs that span the decades to show you how to pep up models ranging from an SE to a Quadra 900 to the not-so-senior PowerBook 1400. Not only do we pull them apart and show you just where to stick your RAM, but we give you tips on tracking down upgrades for models we may have missed. (Hint: Check out the newly updated *This Old Mac* articles at the MacAddict Web site.) We also took a trip down memory lane with trivia culled from the ages. So break out the party hats and screwdrivers, and get ready to rumble. We're going to have a good time tonight. All right?

Happy Birthday!

In honor of the big day, we got your Mac a present. A bunch of presents, in fact. If you're running a 680X0 Mac and feel abandoned by a PowerPC software industry gone mad, you can turn to The Disc for the following non-PowerPC software.

Apple
Apple Spec Database 8-98, MakeRefMovie 1.0, QuickTime 3.0.2

Audio
SimpleSong 1.4, StonerSound 1.1

Communication
Anarchie Pro 3.0, Internet Config 2.0, Netscape Communicator 4.07, Navigator 4.07, PowerMail 2.1.1 demo

Design & Graphics
Acrobat Reader 3.0.2, Cyberoptic GIF Solution 1.0, GraphicConverter 3.4.1, Painting 1.5.3, PhotoCat 2.1.2, POV-Ray 3.1a, VSE HTML Turbo 1.0 demo

Development
Realbasic 1.0 demo

Fun & Games
Astrology 1.2.2, Beat the Dragon 2.5, Bub & Bob 1.3, Bushfire 1.1, Codebook 3.2, EV Override 1.0.1, FleaCircus IV, Frog Xing 1.2, Golden Logres IE 1.0.5, Jewel of Arabia: Dreamers 1.0.1 demo, Mac Football Manager 2.07 demo, Ms. MacPerson 1.0, NetLuff 1.4, Overload 1.0.1, Pac the Man 3.0, Spades Deluxe 1.5, Street Rumble 1.1, Trainset + 10 3.0

Interface
Bryan Bortz's Cursor Collection, ClickTyper 1.2, Default Folder 2.9.3, DoubleTouch 1.0, Kaleidoscope 2.1, MyEyes 2.3.2, Power Windows 2.0.4, PowerSwitch 1.0 demo, Uli's Moose 1.9.2

Multimedia
CineSlider 4.1, VideoScript 1.1.2

Productivity
Address Book 1.0.2, BBEdit Lite 4.1, Consultant 2.52 demo, Convert 1.2.2, Early Bird 1.1.4 demo, Finance 2.1, Mariner Write 2.0.5 demo, Mariner Write Lite 1.0.5, Nisus Writer 4.1.6, Nisus Writer 5.1.3 demo, ScrapIt Pro 5.41, ScribblingWorks 1.1, SpellTools 1.3.3 demo, Virtual TimeClock 1.91

Utilities
Decoder 1.3.7, Conflict Catcher 8.0.2 update, DiskTracker 1.1.4, ExtractIt for System 2.1, Guru 2.7.1, Startup Doubler 1.2, Y2K Software Audit 1.07, Yooz 1.62

Emulation Software
Pseud040 1.3, SoftwareFPU 3.04, Wish I Were... 2.0

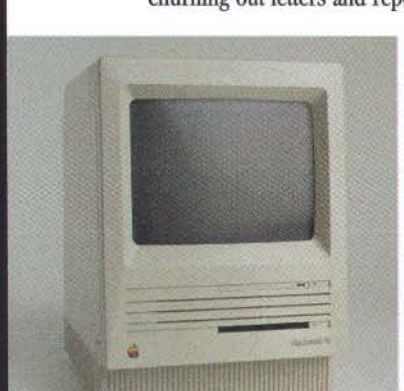
FOR ALL THE 411 ON VENDORS MENTIONED IN THIS ARTICLE, SEE "WHAT ABOUT MY MAC?" ON PAGE 33.

The Mac SE was the first Mac to use a fan. Steve Jobs hated the noise fans make and refused to allow one inside the original Macintosh. • The Mac SE and Mac II were the first "platinum" Macs.

Classic Macs

Macintosh SE

In an era of 300MHz G3 Macs, it's hard to believe that when the 8MHz Macintosh SE was introduced in March 1987 (dangling a price tag of $2,769!), it was Apple's mainstream business computer. Despite its lovable all-in-one compact design, the Mac SE (the initials stand for *system expansion,* in homage to this model's processor-direct slot, a Macintosh first) is limited in its uses today due to its low memory ceiling and slow CPU. However, with RAM maxed out to 4MB and a hard drive running System 7.0.1, just install a word processor and attach a serial printer such as an ImageWriter to start churning out letters and reports.



OUT OF THE BOX

CPU: 8MHz 68000
FPU: What's that?
RAM: 0MB on motherboard, expandable to 4MB
VRAM: Never heard of it
L2 cache: Come again?
Slots: PDS

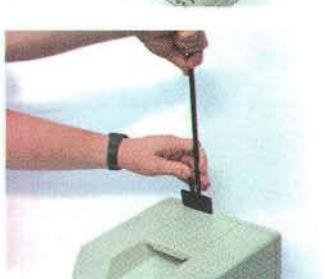
Ideal Upgrade

INCREASE RAM TO 4MB. ADD A HARD DRIVE. INSTALL SYSTEM 7.0.1 AND A WORD PROCESSING PROGRAM. ADD A PRINTER.

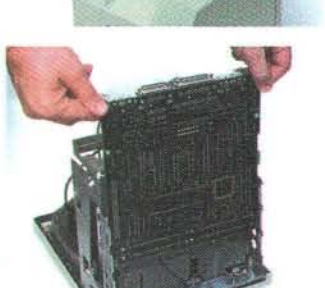
The SE Break-In

1 Unplug all cables and connectors, then remove the two Torx screws deep inside the handle on top and the two other Torx screws on the back near the connectors using a T15 Torx screwdriver such as the Mac Cracker, $29 from Shreve Systems.

2 Separate the bezels using a Mac Cracker and remove the case. Touch the power supply case to discharge static electricity (or wear an anti-static wrist strap if you're a wuss).



3 Pull off the metal shield protecting the motherboard. Disconnect all cables connecting the motherboard to the SE and slide out the board.



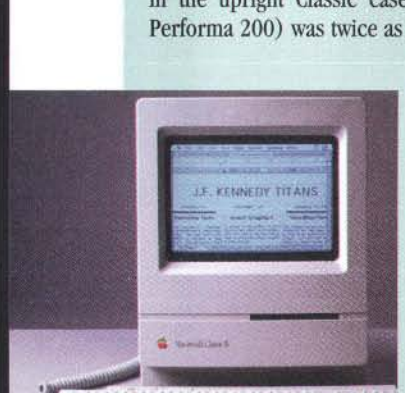
TAKE CARE NEVER TO TOUCH ANY OF THE WIRES CONNECTED TO THE MONITOR, OR YOU RUN THE RISK OF ELECTROCUTION. OPENING AN SE IS VERY DANGEROUS. USE EXTREME CAUTION.

Ideal Upgrade

INCREASE RAM TO 10MB. INSTALL THE FPU, A LARGER HARD DRIVE, AND SYSTEM 7.6.1.

Macintosh Classic II

Following the success of the wildly popular $999 Mac Classic introduced in October 1990, Apple waited a year to release the Mac Classic II at double the price. The company justified the higher price with increased power and greater expandability. Based on the Macintosh LC II motherboard packaged in the upright Classic case, the Mac Classic II (aka the Performa 200) was twice as fast.



OUT OF THE BOX

CPU: 16MHz 68030
FPU: Optional 68882
RAM: 2MB on motherboard, expandable to 10MB
VRAM: Get real
L2 cache: You've got to be kidding me
Slots: Puh-leaze

Classic II Treatments

- **RAM:** Buy two 4MB, 30-pin modules, 100ns or faster, for roughly $35 total, and pop them into the SIMM slots, removing any smaller modules that may be installed.
- **FPU:** An empty connector on the motherboard allows for an optional FPU. For the $30 it'll cost, you'll get snappier screen redraws, improved 3D and graphics program performance, and faster spreadsheet calculations. Plus, some programs demand it.
- **VRAM:** While Apple used to offer an upgrade to turn a Mac Classic into a Classic II, there's no way to upgrade either of these machines to a Mac Color Classic. You're stuck forever with the built-in 9-inch monochrome monitor that displays 512 by 342 pixels. Sorry.
- **FLOPPY DRIVE:** If the floppy drive ain't broke, don't fix it.
- **HARD DRIVE:** The Mac Classic II came with either a 40MB or 80MB hard disk drive. Install a larger hard drive if you crave more space. If you yank out the original hard drive, you can replace it with any one-third-height internal SCSI drive, although you may need a third-party driver and formatter such as FWB Hard Disk ToolKit (650-780-0466, http://www.fwb.com) if the replacement isn't an Apple-brand drive. You can also attach an external drive to the DB-25 SCSI port on the back.
- **SOFTWARE:** The latest system software you can run on the Mac Classic II is System 7.6.1, but you can't buy 7.6.1 anymore, so you might want to settle for System 7.5.3 from Sun Remarketing. Sun sells 7.5.3 on CD for $49, and for the same price you can get the floppy version of System 7.5, which includes Apple Guide, Apple Menu Options, AppleScript, Date & Time control panel, drag and drop, enablers, Fonts folder, Mac Easy Open, menu clock, Numbers control panel, PC Exchange, PowerTalk, QuickDraw GX, WindowShade, and WorldScript.

troduced on October 21, 1993. • The Mac Classic II was known by the following code names: Apollo and Montana. • The Classic II was the last Mac to use a 9-inch, black-and-white monitor.

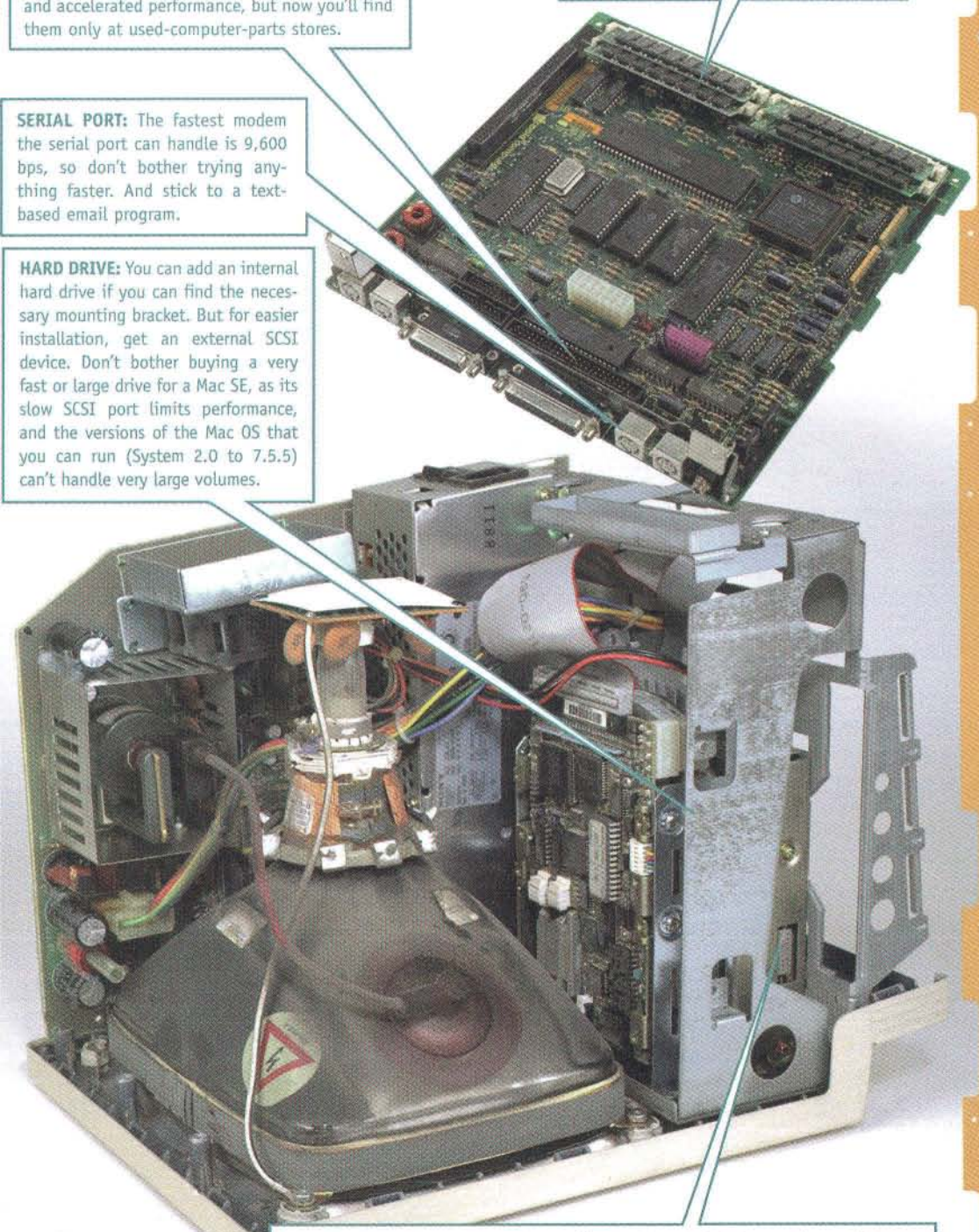
dels ushered in the era of ADB (Apple Desktop Bus) and expansion slots. • Apple missed a great marketing opportunity by not following the naming convention established when the Mac IIx replaced the Mac II. If it had, the Mac SE/30 would have been called the Mac SEx. • The Mac SE was known by the following code names: Aladdin, Chablis, Freeport, Mac Plus or Minus, Maui, Plus Plus. • Apple entered into a five-year, renewable $1 million contract with Modular Computer Systems (http://www.modcomp.com) of Fort Lauderdale, Florida, to acquire the rights to the name Classic for use in the personal computer market. • Apple last used the name on the Col

EXPANSION SLOT: The Mac SE was the first compact Mac with an expansion slot. Back in its heyday, third-party manufacturers released many different cards that plugged into this slot, providing MS-DOS compatibility, color-video output, and accelerated performance, but now you'll find them only at used-computer-parts stores.

RAM: If you have the stock 1MB of memory installed as four 256K SIMM modules, invest $20 to replace them with four 1MB, 30-pin, 150ns modules (two-chip, composite 1MB SIMMs won't work).

SERIAL PORT: The fastest modem the serial port can handle is 9,600 bps, so don't bother trying anything faster. And stick to a text-based email program.

HARD DRIVE: You can add an internal hard drive if you can find the necessary mounting bracket. But for easier installation, get an external SCSI device. Don't bother buying a very fast or large drive for a Mac SE, as its slow SCSI port limits performance, and the versions of the Mac OS that you can run (System 2.0 to 7.5.5) can't handle very large volumes.



FLOPPY DRIVE: You can upgrade your floppy drive with either two floppy drives or one floppy drive and one 3.5-inch half-height SCSI drive. But if you need to read PC-formatted disks, get a SuperDrive and install Apple's PC Exchange control panel. Galaxy Hardware Publishers sells a $100 upgrade kit that you'll need when attaching a SuperDrive, whether it's an internal or an external drive. There's no soldering involved, but if the thought of replacing socketed chips makes you nervous, Galaxy will swap entire motherboards at your request. Or, for a grand total of $175, Galaxy will sell you an upgrade that turns your Mac SE into a 16MHz SE/30, complete with a 1.4MB floppy drive and the potential to install up to 128MB of RAM.

Tip

SEE A NUMBER LIKE M2894LL/A? THAT'S THE APPLE PART NUMBER. YOU'LL WANT TO KNOW IT WHEN YOU CALL AROUND TRYING TO LOCATE THESE PRODUCTS.

System Software Survival School

Apple would like you to believe that by spending $99 on Mac OS 8.5, you'll end up with a brand-new computer. That's stretching it, but it's always a good idea to install the latest, greatest version of the Mac OS for a couple of reasons. First, new software releases generally fix bugs found in the last release, thereby making your Mac more stable and productive. Second, most system software releases boast cool new features that make using your Mac more fun and oftentimes easier.

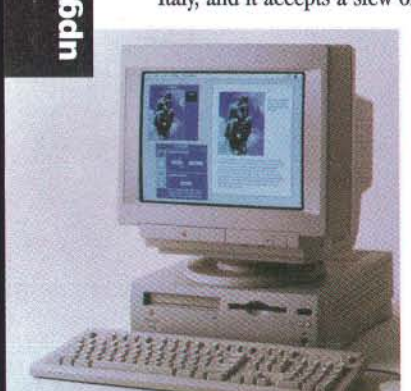
Unless you have one of the original Macs, you should be running at least System 7, which introduced so many "modern" features to the operating system that most software refuses to run on anything less. You can go to the Apple Software Updates site (http://www.info.apple.com/swupdates) and download the free disk images of System 7.0.1, but consider buying the latest version of the operating system your Mac can run. The Apple Software Updates site doesn't have post-7.0.1 versions for free downloading, but there are links for ordering recently discontinued packages (current releases should be available at the Apple Store and most major retailers). If you want to get really retro for historical purposes, contact Sun Remarketing. It has everything dating back to System 3.2 for the Mac 512K. If you don't know what system software your Mac can take, stop by the Apple Tech Info Library at http://til.info.apple.com, or check out the Apple Spec Database that's included on The Disc.

The Mac LC was known by the code names Elsie (as in the Borden cow—try pronouncing the letters L and C), Pinball (its low-slung case design looks like a pinball machine to some), and Prism. • In keeping wit

Mac LCs

Performa 630

From a distance, the stocky little Performa 630 looks like any one of a dozen plain-Jane desktop Macs, but look closer and you'll see why this model was touted as an expandable, flexible multimedia system when introduced in July 1994. The motherboard is easier to access than pasta in Italy, and it accepts a slew of video add-in cards.



OUT OF THE BOX

CPU: 33MHz 68LC040
FPU: Requires 68040 upgrade
RAM: 4MB on motherboard, expandable to 36MB
VRAM: 1MB on motherboard
L2 cache: Requires motherboard swap
Slots: 1 LC PDS, communications, video-in, TV tuner

Ideal Upgrade

UPGRADE TO A POWERPC MOTHERBOARD IF YOU CAN AFFORD IT. INCREASE RAM TO 36MB. INSTALL A LARGER HARD DRIVE, FASTER CD-ROM DRIVE, AND FASTER MODEM.

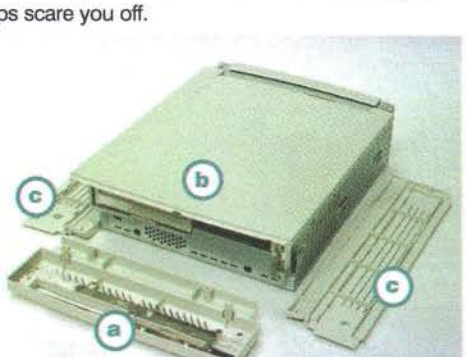
The 630 Break-In

The Performa 630 chassis is a veritable mind game, so there's no shame in hiring a professional installer if the following steps scare you off.

1 **a.** Unplug all cables and connectors, then remove the front bezel.

b. Slide the top forward an inch or so, remove it, and set it aside.

c. Slide the sides forward an inch or so, remove them, and set them aside.



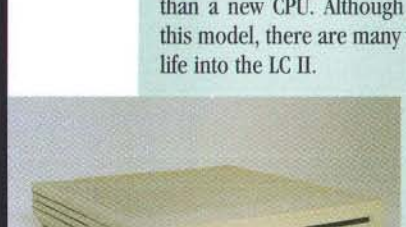
2 Remove the two Phillips screws holding the metal top down on the rear, then slide the top forward an inch, lift it up, and push it back to expose the floppy and CD-ROM drive (the floppy cable is connected to the top, so be careful not to pull it loose). Remove the metal piece below the floppy drive with a screwdriver to get to the CD-ROM drive, which slides forward if you push the plastic release clip underneath.

Ideal Upgrade

INCREASE RAM TO 10MB AND VRAM TO 512K. USE A 13-INCH OR LARGER MONITOR. ADD A LARGER HARD DRIVE. INSTALL SYSTEM 7.6.1. REPLACE THE MOTHERBOARD FOR REAL SPEED.

Macintosh LC II

When the original Mac LC shipped in October 1990, the Mac faithful were so starved for a low-cost color machine that they snapped up a half million units in one year. In March 1992, Apple extended the line with the $1,699 Mac LC II, a machine that offered little improvement other than a new CPU. Although Apple underpowered this model, there are many ways of breathing new life into the LC II.



OUT OF THE BOX

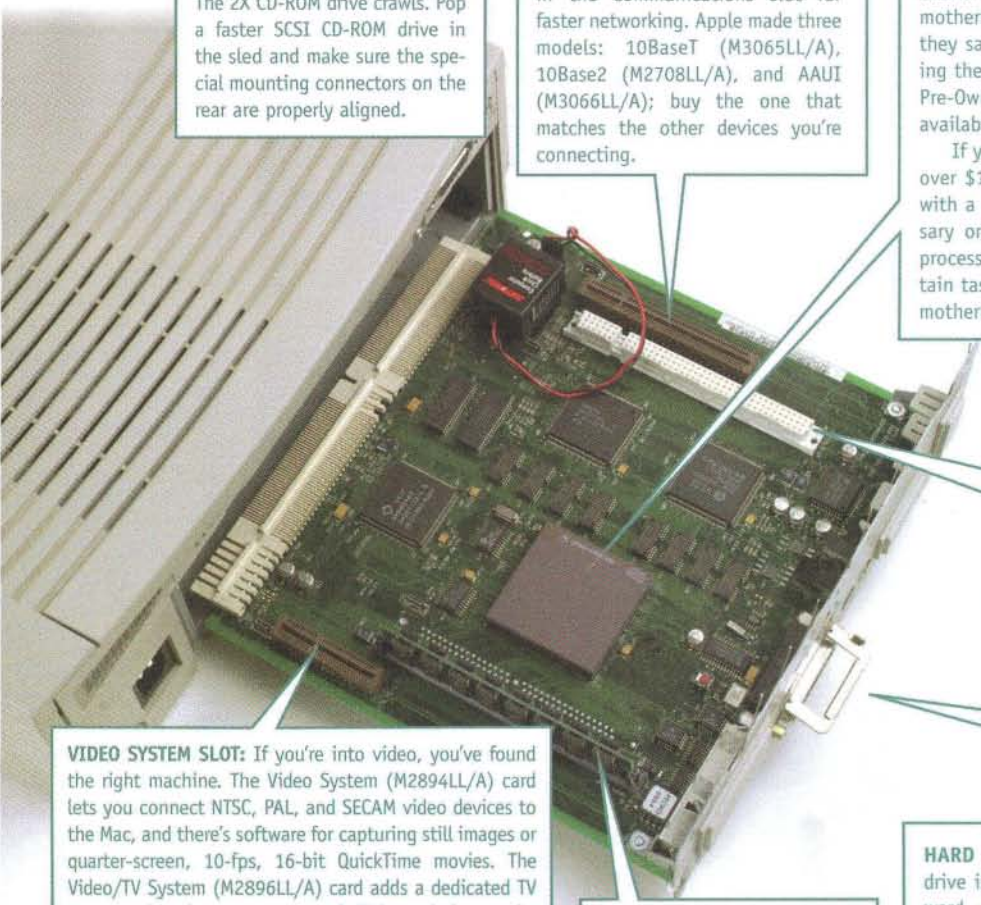
CPU: 16MHz 68030
FPU: Optional 68882 requires PDS slot
RAM: 4MB on motherboard, expandable to 10MB
VRAM: 256K, expandable to 512K
L2 cache: Yeah, right
Slots: 1 LC PDS

LC II Treatments

- **RAM:** Install two 4MB, 100ns modules in the two 30-pin SIMM slots for a total of 12MB of RAM, even though the Mac LC II can't utilize anything beyond the first 10MB. It's better to waste 2MB of RAM than fall short of the maximum. The LC II can also benefit from turning on virtual memory or using Connectix's RAM Doubler.
- **VRAM:** The Mac LC II comes with 256K of VRAM, but you need 512K of VRAM installed to display 256 colors (8 bits) at 640 by 480 pixels, a common requirement for many games. Remove your 256K VRAM module and replace it with a 100ns or faster 512K module. If you're still getting by with an old 12-inch monitor, ditch it for a 13-inch model or larger.
- **FLOPPY DRIVE:** The LC II has a single 1.4MB internal floppy drive. If there's nothing wrong with it, leave it alone.
- **HARD DRIVE:** Add external SCSI hard drives if you need to augment the stock internal 80MB, 3.5-inch SCSI hard drive. Whatever you use for your startup disk, make sure it's running Mac OS 7.6.1.
- **SLOTS:** The Mac LC II has a PDS slot that accepts accelerators, video cards, or network cards, but you must be sure to get devices specifically designed for the LC II. You can also either insert an Ethernet card into the PDS slot for faster networking or try to scrounge up an external box, such as Asanté's Slotless Macintosh Ethernet Controller (408-435-8388, http://www.asante.com), which attaches to the DB-25 SCSI connector on the rear.
- **CPU:** Parts vendors still sell Apple-brand motherboards that turn an LC II into a Mac LC III/Performa 450 with a 25MHz 68030, or a Quadra 605/Performa 475 with a 25MHz 68LC040. Both upgrades offer significantly faster CPUs than the LC II, and they break the 10MB RAM barrier, allowing expansion to 36MB. MicroMac Technology even sells a $199 Power WorkStation that replaces your current LC II "pizza box" with a larger chassis with room for added expansion. It includes a 32MHz 68030 ThunderCache accelerator, a dual-slot PDS adapter for an optional Ethernet card, and internal bays for a second drive.

cated at 180 Woz Way, in honor of Steve's generous donations. Steve Wozniak met his first girlfriend through a Polish Dial-a-Joke operation he was running from a bank of phones in his apartment; they later wed.

l theme begun with the Mac LC's code name of Elsie, the Mac LC II was known as Foster Farms. • The Mac LC III was the first Macintosh to use 72-pin SIMM modules for memory expansion. • The Performa 400, 405, 410, and 430 are all variations on the Mac LC II; the only difference between these models is the software bundled with the computer. • The Performa 630 was also sold as the Quadra 630 with a 68040, as well as the LC 630. When the Mac LC was originally introduced in October 1990, the Macintosh installed base was 4,650,000 units strong. • In February 1993, Apple shipped its ten millionth Macintosh, a Color Classic. • Steve Jobs claims to be ambidextrous. • The Children's Discovery Museum



CD-ROM DRIVE (not pictured): The 2X CD-ROM drive crawls. Pop a faster SCSI CD-ROM drive in the sled and make sure the special mounting connectors on the rear are properly aligned.

COMM SLOT: Install an Ethernet kit in the communications slot for faster networking. Apple made three models: 10BaseT (M3065LL/A), 10Base2 (M2708LL/A), and AAUI (M3066LL/A); buy the one that matches the other devices you're connecting.

CPU: For a complete brain transplant, install a Performa 6200 motherboard with either a 75MHz or a 90MHz PowerPC 603, built-in Ethernet, and 256K of L2 cache. For more speed, use a 120MHz Performa 6320 motherboard. None of these upgrades rival a G3, but they satisfy PowerPC software requirements while lifting the RAM ceiling to 64MB. Contact Shreve Systems, Pre-Owned Electronics, or MicroMac Technology for availability and pricing.

If you can't afford full-out brain surgery, for a little over $100 you can replace the socketed 68LC040 CPU with a 68040 that includes a built-in FPU (not necessary on the Quadra 630 version of this model). The processor isn't any faster, but the FPU speeds up certain tasks. Consider this only if you can't afford a new motherboard and you do a lot of spreadsheet work.

PDS SLOT: The 14-inch monitor bundled with the Performa 630 is limited to 640 by 480 pixels with thousands of colors, but the 1MB of VRAM on the motherboard is enough for 8-bit (256 colors) graphics up to 832 by 624 pixels on 15-inch VGA and SVGA monitors. If you need more colors or greater resolution, you must install a video card in the LC PDS slot and get a bigger monitor.

MOTHERBOARD: Press down on the two tabs holding the back panel to the chassis, then pull this metal handle to slide the motherboard out.

VIDEO SYSTEM SLOT: If you're into video, you've found the right machine. The Video System (M2894LL/A) card lets you connect NTSC, PAL, and SECAM video devices to the Mac, and there's software for capturing still images or quarter-screen, 10-fps, 16-bit QuickTime movies. The Video/TV System (M2896LL/A) card adds a dedicated TV tuner to the mix so you can watch TV in a window on the desktop. Finally, the Presentation System (M2895LL/A) drop box mirrors the Mac's monitor on a large TV for presentations, or outputs to VCR for recording.

RAM: Max out your memory by dropping a 32MB RAM module into the one available 72-pin, 80ns SIMM slot.

HARD DRIVE (not pictured): The stock 250MB hard drive is puny. To replace it, slide the floppy drive forward, pull it out, and set it aside. Unplug the hard drive's power and data cables, push the release clip, and slide the drive forward. Swap in another IDE drive of the same dimensions but with greater storage capacity.

Model Makeovers

Make your newly upgraded Macs look as good as they'll run with a quick cleaning. Follow our good housekeeping rules to prevent yourself from shorting out your monitor while spit-shining your screen.

■ THE CASE

Rub it with a damp (not wet) terry washcloth to remove any scuff marks. A little water won't hurt the Mac's plastic case, but if you run up against stubborn marks that call for anything stronger, always use cleaner sparingly and test it on an inconspicuous area first so that you don't mar the finish. If water fails to remove a mark, spray a little mild glass cleaner on the cloth and rub more vigorously. Then try a cotton ball dipped in isopropyl rubbing alcohol and squeezed dry. If that doesn't work, switch to a mild abrasive such as Soft Scrub. For particularly nasty gunk such as the residue of a stick-on label, a *very* light touch of Goof Off or a similar product may be your only hope, but be careful, work quickly, and wipe clean with water immediately so the corrosive liquid doesn't get a chance to dull the plastic beneath the label glue.

■ THE SCREEN

For cleaning spittle, snot, and fingerprint marks off screens, always read the care instructions that came with your display, as some have special antiglare coatings that ordinary household cleaning products can ruin. That said, you can't go wrong by gently rubbing the screen with a slightly damp, soft, lint-free paper or cloth. If you use a mild glass cleaner, spray it onto the cloth, not directly onto the screen, as it may drip inside the monitor and cause damage.

■ THE INTERIOR

Any Mac with a fan can get pretty dusty inside, as the fan tends to suck every free-floating particle from the air directly into the case, where it settles like a blanket on components. After you've opened up your Mac, buy a can of compressed air from your local photo supply store and carefully blow out all the dust that has gathered over the years. Don't be a cheapskate and just blow really hard with your mouth, as you're likely to end up spraying spit all over everything, a disgusting and potentially destructive predicament.

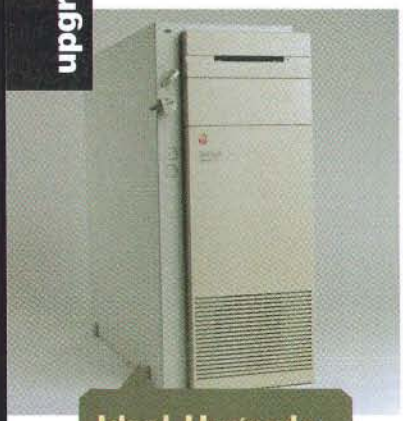
The floppy drive is also often choked with dust, which can build up to the point where you may have difficulty reading or writing disks. Radio Shack and other computer retailers sell inexpensive 3.5-inch floppy drive cleaning kits that help safely remove dirt and dust buildup. Use them regularly as directed on the package.

The 68040 being the fourth major advancement in Motorola's venerable 68000 series of CPUs, Apple figured it was only fitting that Macs so equipped be called Quadras. • The Quadra 900 was kr

NuBus Macs

Quadra 900

If you think Apple charges a lot of money for G3-based Power Macs these days, consider that the Quadra 900—the first 68040-based Mac—cost a staggering $7,199 when introduced in October 1991. But people gladly snapped it up because it was $2,000 cheaper than the previous king of the hill—the Mac IIfx—and 20 percent faster.



OUT OF THE BOX

CPU: 25MHz 68040
FPU: Integrated
RAM: 0MB on motherboard, expandable to 256MB
VRAM: 1MB, expandable to 2MB
L2 cache: Nope
Slots: 5 NuBus, 1 PDS (precludes use of 1 NuBus slot)

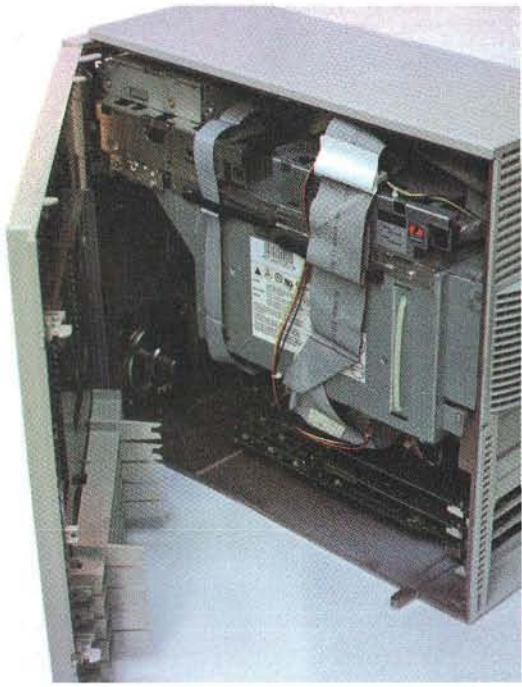
Ideal Upgrade

INCREASE RAM TO AT LEAST 64MB, 4MB AT A TIME. MAXIMIZE VRAM TO 2MB. ADD A SECOND INTERNAL SCSI DRIVE FOR MORE STORAGE AND A CD-ROM DRIVE FOR INSTALLING MAC OS 8.1.

The Quadra Break-In

1 Just press down on the two tabs on the back right side.

2 Swing open the panel for VIP backstage access.

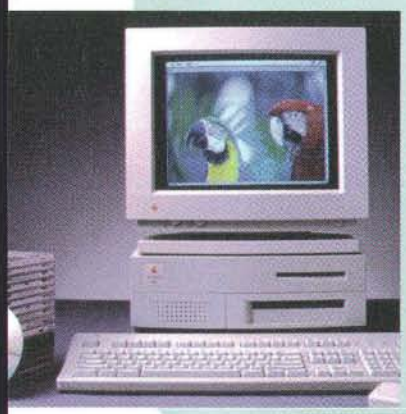


Ideal Upgrade

INCREASE RAM TO 68MB, 4MB MODULES AT A TIME. MAXIMIZE VRAM TO 1MB, OR INSTALL A NUBUS VIDEO CARD AND ATTACH A LARGER MONITOR. UPGRADE TO A POWER MAC 7100 MOTHERBOARD. INSTALL SYSTEM 7.6.1.

Mac IIvx

Designed as a replacement for the workhorse Mac IIci, the IIvx was introduced in October 1992 at a base price of $2,949, but didn't offer any speed improvement because even though its CPU was faster, its system bus was slower. Its most compelling feature was the option for an internal CD-ROM drive, a first for the Mac line. After helping launch the multimedia revolution, the Mac IIvx was quickly replaced by the cheaper, more powerful Centris family, leaving many buyers feeling stiffed. But all's not lost—even this old Mac can be upgraded with a PowerPC and a boatload of RAM.



OUT OF THE BOX

CPU: 32MHz 68030
FPU: 68882
RAM: 4MB on motherboard, expandable to 68MB
VRAM: 512K, expandable to 1MB
L2 cache: 32K soldered
Slots: 3 NuBus, 1 cache

Mac IIvx Treatments

■ **RAM:** The four 30-pin SIMM sockets must be filled with like-size modules, all at the same time. Maximize memory to 68MB with four 16MB, 80ns or faster SIMMs for about $120 at current prices.

■ **VRAM:** The video logic board in the Mac IIvx came with only 512K of VRAM, enough for 256 colors at a maximum resolution of 640 by 480 pixels on 12-inch, 13-inch, 14-inch, and VGA displays. Replacing the two factory-installed modules with 512K versions that are each 100ns or faster lets you see thousands of colors, but the maximum resolution remains 640 by 480 unless you use a NuBus video card instead of the built-in video circuitry. Models of this Mac that came equipped with the optional built-in AppleCD 300i drive generally came with 1MB of VRAM instead of 512K.

■ **SLOTS:** The Mac IIvx has a so-called "accelerator slot" into which you can place an additional cache card. Despite its name, the $29 MicroMac IIci 32K Cache Card works in the Mac IIvx and boosts overall speed by 30 percent. Installation is as simple as popping the card into the slot on the motherboard. Apple's own IIci cache card doesn't work in the IIvx, however. Don't add a cache card if you intend to upgrade the motherboard.

■ **CPU:** MicroMac, Pre-Owned Electronics, and Shreve Systems all sell motherboard swaps. For about $150, you can upgrade to a Centris/Quadra 650, which gets you a 68040 CPU running at 25MHz or 33MHz, VRAM expandable to 1MB, and maximum RAM increased to 136MB, although 72-pin SIMMs are required. To reuse your existing 30-pin SIMMs, you need MicroMac's $19 SIMMchanger Memory Upgrade. Sonnet Technologies also has a $200 Presto upgrade card that plugs into the PDS, giving you a 40MHz 68040 and 128K L2 cache (an FPU costs $100 extra). For maximum speed, shell out $350 and score yourself a Power Mac 7100 motherboard with either 66MHz or 80MHz PowerPC 601 chips, which also lifts the memory ceiling to 136MB.

■ **CD-ROM DRIVE:** Replace the 2X internal CD-ROM drive with a faster external CD-ROM drive, and keep the internal one for audio use.

■ **HARD DRIVE:** You can replace the internal SCSI hard drive with any other 3.5-inch half-height drive, but it's best to attach another device externally to the DB-25 SCSI port on the rear.

■ **SLOTS:** Set aside one NuBus slot for an Ethernet card if the built-in LocalTalk networking leaves you slobbering for more speed. Drop a video card or two into the remaining slots to use monitors that are larger than 14 inches.

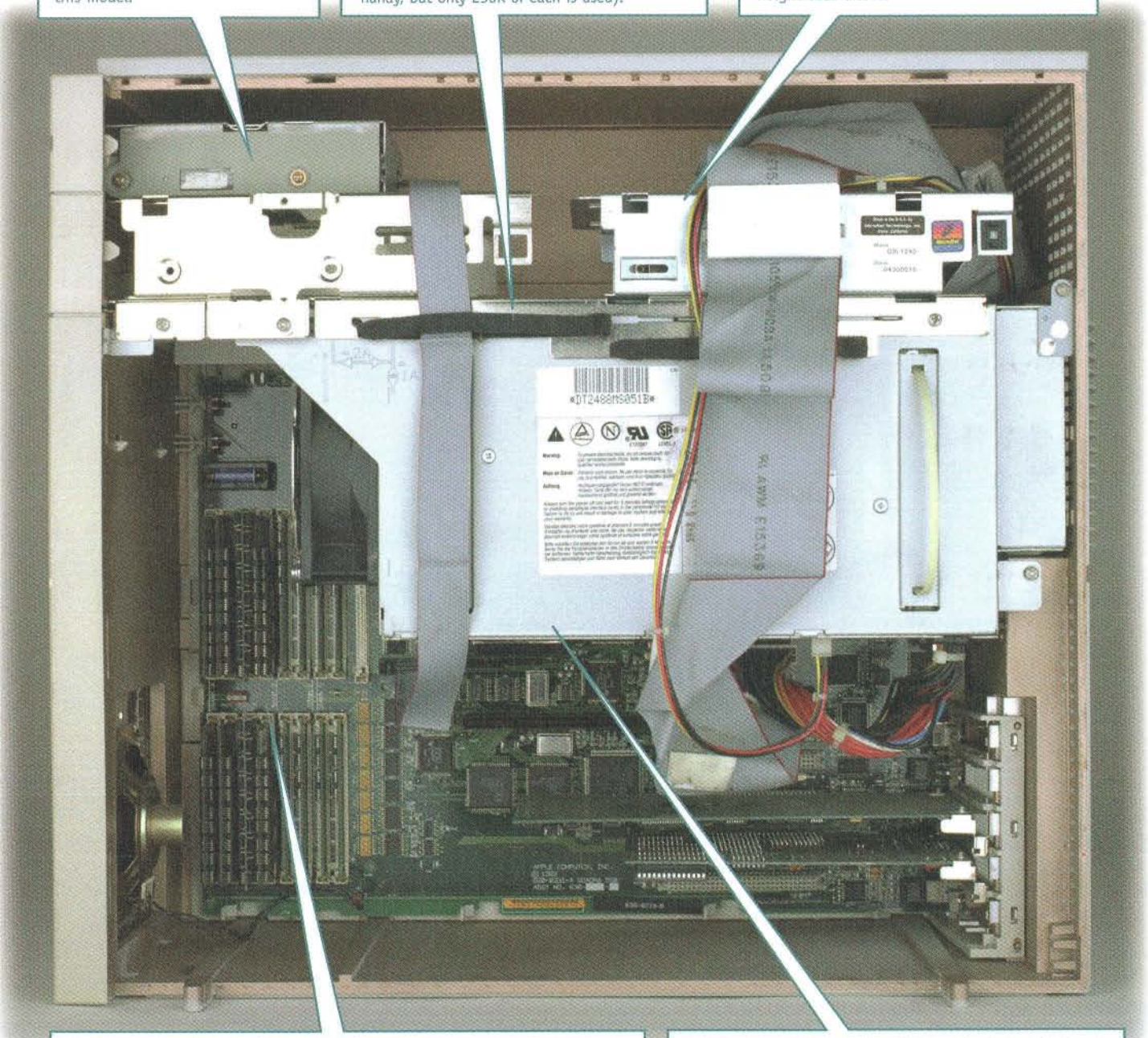
he last member of the Mac II family and the first Mac offered with an internal CD-ROM option. • The Mac IIvi was based upon the IIvx, but ran at half the clock speed and was never sold in the U.S.

lowing code names: Darwin, Eclipse (a class of sailboat, and "Going to eclipse the NeXT"), Premise 500, and Ilex. • The Quadra 900 offered greater memory expansion (up to 256MB) than any Macintosh previously released. • The Quadra 900 was the first Mac model to come with a key. The On position was for normal use. In the Off position, the computer could not be turned on. The Secure position was intended for dedicated file server operation and disabled the ADB port and floppy disk drive. • The Mac Ilvx used the code name Brazil 32c. • The Ilvx lost more of its value faster than any other model, with an annual percentage rate decline of 46 percent. • The

FLOPPY DRIVE: The Quadra 900 shipped with one 1.4MB floppy drive, but whether you opt for an internal or external unit, you'll want to attach a CD-ROM drive so that you can easily install Mac OS 8.1, the last OS release that will run on this model.

VRAM (underneath): The Quadra 900 has 1MB of VRAM soldered to the motherboard, sufficient for 8-bit color up to 1,152 by 870 pixels. To increase video memory to the 2MB maximum, populate the four VRAM sockets with 256K SIMM modules (you can use four 512K modules if you have them handy, but only 256K of each is used).

HARD DRIVE: You've got either an 80MB or a 160MB internal hard drive, neither of which is large enough for a usable Mac OS install these days. Add one full-height SCSI drive to the existing configuration, or yank out the floppy drive to allow for either two removable-media drives and one full-height SCSI drive, or two removable-media drives and up to two half-height SCSI drives.



RAM: The Quadra 900 doesn't have any memory on board, but it does have 16 30-pin SIMM sockets that accept 80ns or faster modules added four at a time. To max out the Quadra 900 to 256MB, expect to pay at least $500.

CPU (underneath): For $50, MicroMac Technology's Speedy Accelerator cranks up the motherboard's clock oscillator for 15 to 50 percent more speed. Or you can get a 100 percent speed boost with Sonnet Technologies' $200 QuadDoubler, which plugs directly into the CPU socket. For $249, Pre-Owned Electronics upgrades your motherboard to that of a Quadra 950 with a 33MHz 68040. Last but definitely not least, if you want to move on up to a first-generation PowerPC, Pre-Owned Electronics also has 60MHz PowerPC 601 upgrades for $549.

The first-generation Power Macintosh 6100/60, 7100/66, and 8100/80 went by the code names PDM, Carl Sagan, and Cold Fusion, respectively. When Sagan, the astronomer, caught wind of this, he complained ab

Power Macs

Power Macintosh 7300

When Apple released the Power Macintosh 7300 in February 1997, the company considered it a midrange system offering high performance for small- and medium-size businesses at prices ranging from $2,300 to $2,800. A little more than a year later, Apple unveiled the iMac, a "low-end" machine at half the price with a screaming-fast 233MHz G3 processor, speedier CD-ROM drive, larger hard drive, faster Ethernet, and built-in monitor and modem. It's enough to make a small businessman cry into his three-martini lunch. But you can wipe away those tears, because there's nothing wrong with the Power Mac 7300 that a few good upgrades can't fix.

OUT OF THE BOX

CPU: 180MHz to 200MHz PowerPC 604e
FPU: Integrated
RAM: 0MB on motherboard, expandable to 512MB
VRAM: 2MB, expandable to 4MB
L2 cache: 256K DIMM
Slots: 3 PCI

Ideal Upgrade

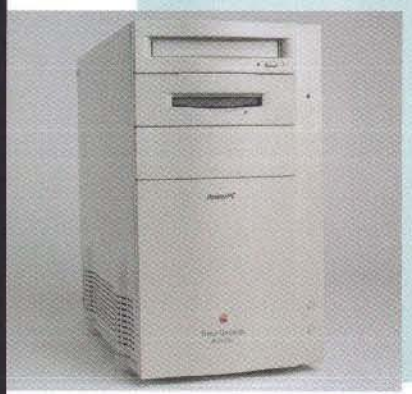
INCREASE RAM TO AT LEAST 64MB, IN PAIRS FOR INTERLEAVING. MAXIMIZE VRAM TO 4MB IF NEEDED. UPGRADE TO A G3 PROCESSOR, NOT A FASTER POWERPC 604. ADD A SECOND INTERNAL SCSI DRIVE FOR MORE STORAGE. INSTALL MAC OS 8.5.

Ideal Upgrade

INCREASE RAM TO AT LEAST 64MB, IN PAIRS. MAXIMIZE VRAM TO 4MB. UPGRADE TO G3, NOT FASTER POWERPC 604. ADD A SECOND INTERNAL SCSI DRIVE FOR MORE STORAGE. ADD A FASTER EXTERNAL CD-ROM DRIVE. INSTALL MAC OS 8.5.

Power Mac 8100

When it was introduced in March 1994, the Power Mac 8100/80 was billed as "the fastest Macintosh computer ever." At its heart beat a PowerPC 601, the new RISC-based processor developed jointly with IBM and Motorola to supplant the aging 68000 series of CPUs previously used. The base model cost $4,249, to which you could add an AV card (M3447LL/A) if you wanted audio and video input/output capabilities. The minitower Power Mac 8100 reigned supreme over all other models until Apple released the Power Mac 9500/120 in May 1995. The former speed demon will never regain its title as "the fastest Mac," but it can be souped up enough to stay in the race.



OUT OF THE BOX

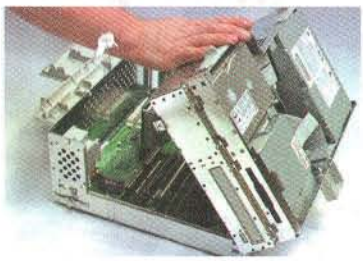
CPU: 80MHz to 110MHz PowerPC 601
FPU: Integrated
RAM: 8MB on motherboard, expandable to 264MB
VRAM: 2MB, expandable to 4MB
L2 cache: 256K DIMM
Slots: 3 NuBus, 1 PDS

The 7300 Break-In

1 Unplug all cables and connectors, then take off the optional security bar (if you have it) on the underside of the front panel by removing the single Phillips screw and pressing the bar in the center. Press the two release buttons at the edges on the underside of the front panel, pull the case forward about two inches, then lift up the front panel and set it aside.

2 Flip open the expansion card cover on the left rear. Slide the front and back latches to the center.

3 Flip out the support foot on the right. Swing the chassis out of the way to the right, exposing the motherboard.

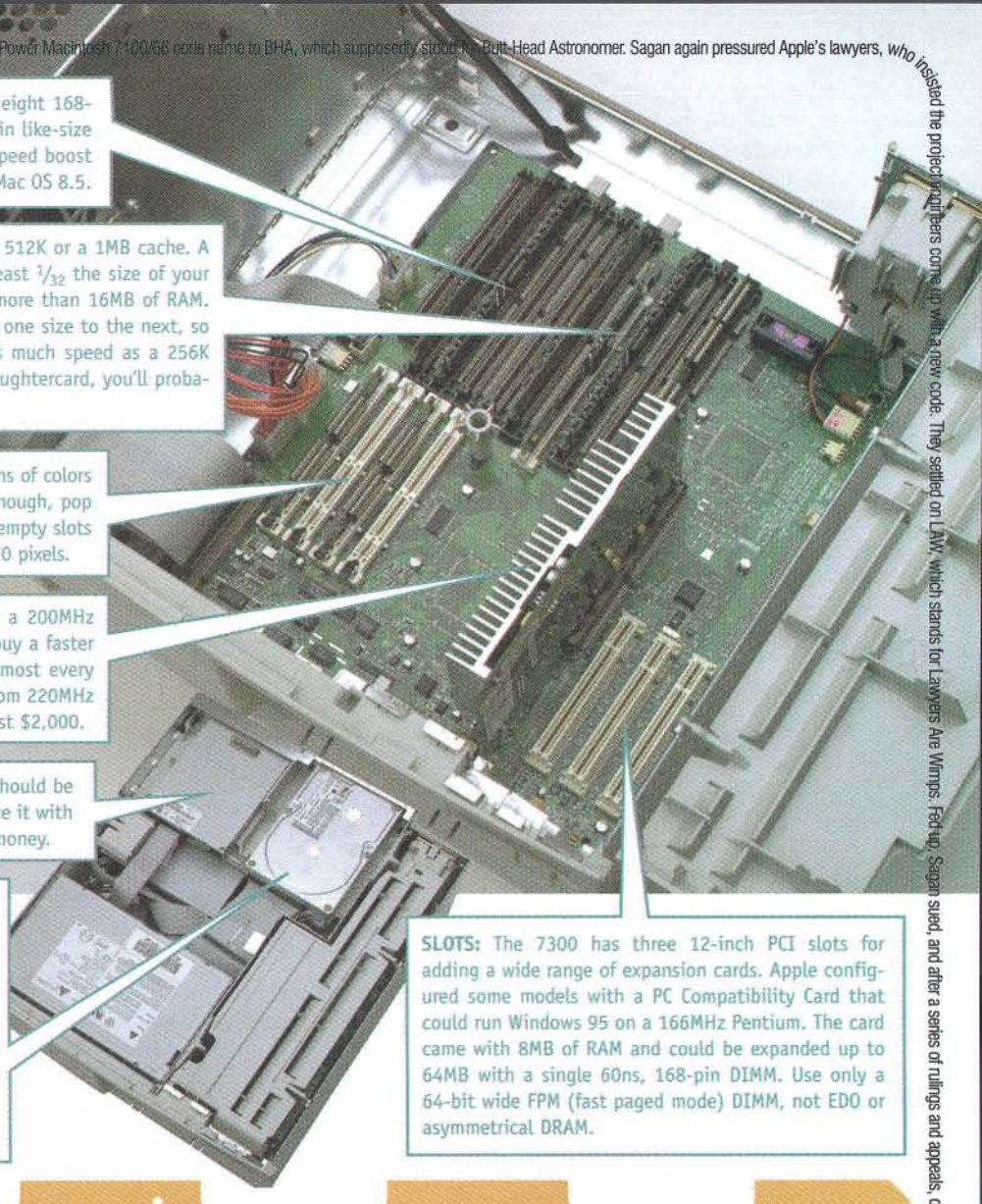


8100 Treatments

- **RAM:** To run Mac OS 8.5 comfortably, add at least 64MB of RAM using 80ns or faster noncomposite modules in the eight available 72-pin SIMM slots. The 8100 doesn't support memory interleaving, but you still must add SIMMs in pairs that are the same size and speed.
- **VRAM:** On AV-equipped 8100s, you can't expand the VRAM, but on other models you can upgrade the 2MB of soldered VRAM to 4MB by installing four 512K modules. This expansion allows for millions of colors on displays up to 21 inches. If your 8100 lacks the AV option, you can buy this PDS card for around $300 from a number of vendors, including Pre-Owned Electronics.
- **CACHE:** The Power Mac 8100 has an HDI-45 port for 16-inch screens and smaller, and a DB-15 connector for other monitors. If you're using the HDI-45 connector, remove the standard 256K L2 cache from its slot and replace it with a 1MB module for speedier graphics tasks. If a 1MB L2 cache adds up to more than half the cost of an accelerated video card, get the card and plug your monitor into that instead of the HDI-45 connector. You'll see some extra speed and still get to keep your 256K L2 cache.
- **CPU:** MicroMac Technology's $50 Speedy Accelerator clips onto the motherboard's clock oscillator and allows you to set the CPU speed with a small dial, from 115 to 150 percent of original speed. For $599, Shreve Systems will take your 8100 motherboard and give you one from a Power Mac 8500 with a 132MHz PowerPC 604. But if it's real power you crave, the Sonnet Crescendo G3 upgrade card comes in models from 217MHz with 512K backside cache ($500) to 267MHz with 1MB backside cache ($800).
- **CD-ROM DRIVE:** Replace the internal AppleCD 300i Plus CD-ROM drive with a faster model, but consider an external drive so you can reserve your old drive to play audio CDs.
- **HARD DRIVE:** The standard 8100 came with one internal SCSI hard disk (700MB, 1GB, or 2GB). Rather than replace the existing drive, add another 3.5-inch SCSI device, including a removable-media drive, in the precabled bay.

al to the after-dinner liqueur. • During the joint development of the PowerPC CPU with IBM and Motorola, first CEO John Sculley and then Michael Spindler were frantically trying to merge Apple with another company.

orized use of his name. In deference to the noted stargazer, Apple changed the Power Macintosh 7100/66 code name to BHA, which supposedly stood for Butt-Head Astronomer. Sagan again pressured Apple's lawyers, who insisted the project engineers come up with a new code. They settled on LAW, which stands for Lawyers Are Wimps. Fed up, Sagan sued, and after a series of rulings and appeals, on November 15, 1995, Apple and Carl Sagan reached "an amicable settlement," the terms of which have never been revealed. • The Power Mac 8100/110 was known internally as Flagship. • The Power Macintosh project started under the code name Cognac, in honor of a RISC (reduced instruction set computing) pioneer with a s



RAM: Plug 70ns or faster RAM modules into the eight 168-pin DIMM slots and add them in matching banks in like-size pairs to take advantage of the 10 to 30 percent speed boost from interleaving. You need at least 64MB to run Mac OS 8.5.

CACHE: Replace the 256K L2 cache with either a 512K or a 1MB cache. A good rule of thumb is to get a cache that's at least $^1/_{32}$ the size of your RAM—go for a 1MB L2 cache for any Mac with more than 16MB of RAM. You'll realize diminishing returns as you go from one size to the next, so don't expect a 512K cache to give you twice as much speed as a 256K cache. Also, if you intend to upgrade the CPU daughtercard, you'll probably need to remove the cache altogether.

VRAM: The standard 2MB of VRAM gets you millions of colors at a resolution up to 832 by 624. If that's not enough, pop two additional VRAM modules into the remaining empty slots for 24-bit color on screens with up to 1,152 by 870 pixels.

CPU: The 7300 comes with either a 180MHz or a 200MHz PowerPC 604e on a CPU daughtercard. You can buy a faster PowerPC 604, but for the best boost, go G3. Almost every upgrade vendor offers something for the 7300, from 220MHz G3s for around $400 to 333MHz models for almost $2,000.

CD-ROM DRIVE: The internal 12X CD-ROM drive should be fine for most purposes, but you can always replace it with a higher-speed drive if you want to waste your money.

HARD DRIVE: You can replace the internal 2GB hard disk drive if you need more storage space, but since there's a precabled expansion bay for a second half-height, 3.5-inch SCSI drive, it's easier just to add one. The internal SCSI bus supports data transfer speeds up to 10 MBps, so it's better able to handle faster drives than the standard SCSI bus on the rear, which only goes up to 5 MBps. For really fast drives, get a SCSI accelerator card that plugs into the PCI bus.

SLOTS: The 7300 has three 12-inch PCI slots for adding a wide range of expansion cards. Apple configured some models with a PC Compatibility Card that could run Windows 95 on a 166MHz Pentium. The card came with 8MB of RAM and could be expanded up to 64MB with a single 60ns, 168-pin DIMM. Use only a 64-bit wide FPM (fast paged mode) DIMM, not EDO or asymmetrical DRAM.

What About My Mac?

Feeling left out? Don't see your Mac mentioned anywhere? Don't sweat it. Just about every Mac has upgrade potential—you just need to know where to look and what to ask for. Read on for a few trade secrets.

Step 1. Do some basic research. Check the AppleFacts Online Archive (http://product.info.apple.com/productinfo/datasheets), where Apple maintains data sheets for all of its computers, past and present.

Step 2. Read the freakin' manual. If you've lost it, pay a call to the Apple Product Documentation Archive at http://support.info.apple.com/manuals/manuals.qry.

Step 3. Focus your search. While you're online, bop on over to Apple's Tech Info Library (http://til.info.apple.com) and search for your Mac's precise model name. You can often find explanations to problems you're having as well as available software updates. Also check out *MacAddict*'s newly updated *This Old Mac* series at http://www.macaddict.com.

Step 4. Update your software. Before you log off, drop into the Apple Software Updates site (http://www.info.apple.com/swupdates) and download any system software or utility updates that pertain to your Mac.

Step 5. Put your money where your Mac is. Below is a list of some of the best-stocked vendors of Mac upgrades and parts to help start your search.

- **Galaxy Hardware Publishers (888-345-1817 or 541-345-1817, http://www.galaxyhp.com)**
- **MacTell (888-622-8355 or 512-323-6000, http://www.mactell.com)**
- **MicroMac Technology (800-600-6227 or 949-362-1000, http://www.micromac.com)**
- **NewerTech (888-656-8324 or 316-943-0222, http://www.newertech.com)**
- **Other World Computing (800-275-4576 or 815-338-8685, http//www.fastermacs.com)**
- **Pre-Owned Electronics (800-274-5343, http://www.preowned.com)**
- **Shreve Systems (800-227-3971 or 318-424-7987, http://www.shrevesystems.com)**
- **Sonnet Technologies (800-786-6260 or 949-261-2800, http://www.sonnettech.com)**
- **Sun Remarketing (800-821-3221 or 435-755-3360; http://www.sunrem.com)**
- **Vimage (877-484-6243 or 310-225-3979, http://www.vimagestore.com)**
- **XLR8 (888-957-8867 or 316-636-5544, http://www.xlr8.com)**

Step 6. Remember memory. Fortunately, all you need is Guru, NewerRAM's guide to RAM upgrades (it's on The Disc). This free, industry-standard tool determines all possible RAM and VRAM upgrades for every Mac ever made, including clones. To find out what you can expect to pay for memory, check RAMSeeker (http://www.macseek.com) and the Mac Resource Page RAMWatch (http://www.macresource.pair.com/mrp/ramwatch.shtml).

Jobs thought of the original Macintosh as a step along the way to creating a revolutionary "Mac in a book" by 1986. • In April 1985, Jobs failed to convince Apple's board to build a battery-operated

PowerBooks

PowerBook 1400cs/117

When introduced in October 1996, the PowerBook 1400 was the first laptop from Apple to offer a removable modular CD-ROM drive and BookCovers. Apple sold three models ranging in price from $2,499 to $3,499. All three models had at their core a 117MHz PowerPC 603e (later releases pushed 166MHz); the only differences are the amount of memory, type of screen, hard drive size, and whether or not a CD-ROM drive is standard. Although the PowerBook 1400 is not as stylish as Apple's latest laptops, it's possible to upgrade this model with a speedy G3 processor for the most demanding road work.

OUT OF THE BOX

CPU: 117MHz to 166MHz PowerPC 603e
FPU: Integrated
RAM: 8MB on motherboard, expandable to 64MB
VRAM: Nope
L2 cache: Requires a CPU daughtercard upgrade
Slots: Two PC Card, one expansion slot for Ethernet or video-out

Ideal Upgrade

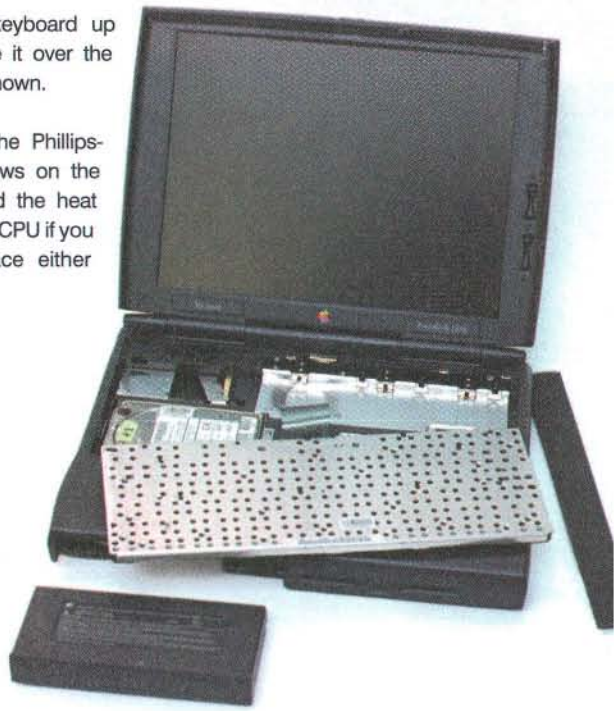
ADD CD-ROM OR ZIP DRIVE. INCREASE RAM. INSTALL MAC OS 8.5. UPGRADE TO A G3. INSTALL INTERNAL ETHERNET. ADD V.90 PC CARD MODEM.

The 1400 Break-In

1 Unplug all cables and connectors, shut down the PowerBook, and take out the battery. Then get to the guts by sliding the plastic speaker grill that resides between the keyboard and the screen to the left and popping it off.

2 Flip the keyboard up and drape it over the trackpad, as shown.

3 Remove the Phillips-head screws on the hard drive and the heat sink above the CPU if you want to replace either unit.



Ideal Upgrade

INCREASE RAM TO 8MB. INSTALL AN INTERNAL MODEM. ATTACH A LARGER HARD DRIVE. REPLACE THE BACK-LIGHT BULB IF IT'S DEAD.

PowerBook 170

Apple's first attempt at creating a laptop computer culminated in the 16-pound Macintosh Portable, a true clunker. However, the engineers finally got it right in October 1991 with the original PowerBook family, which sold more than 400,000 units within one year of introduction. With built-in trackballs and pushed-back keyboards, the PowerBooks won numerous industrial design awards. Originally sold for $4,599, the PowerBook 170 goes for around $200 today, yet it remains a functional—and fetching—mobile telecommunications station.

OUT OF THE BOX

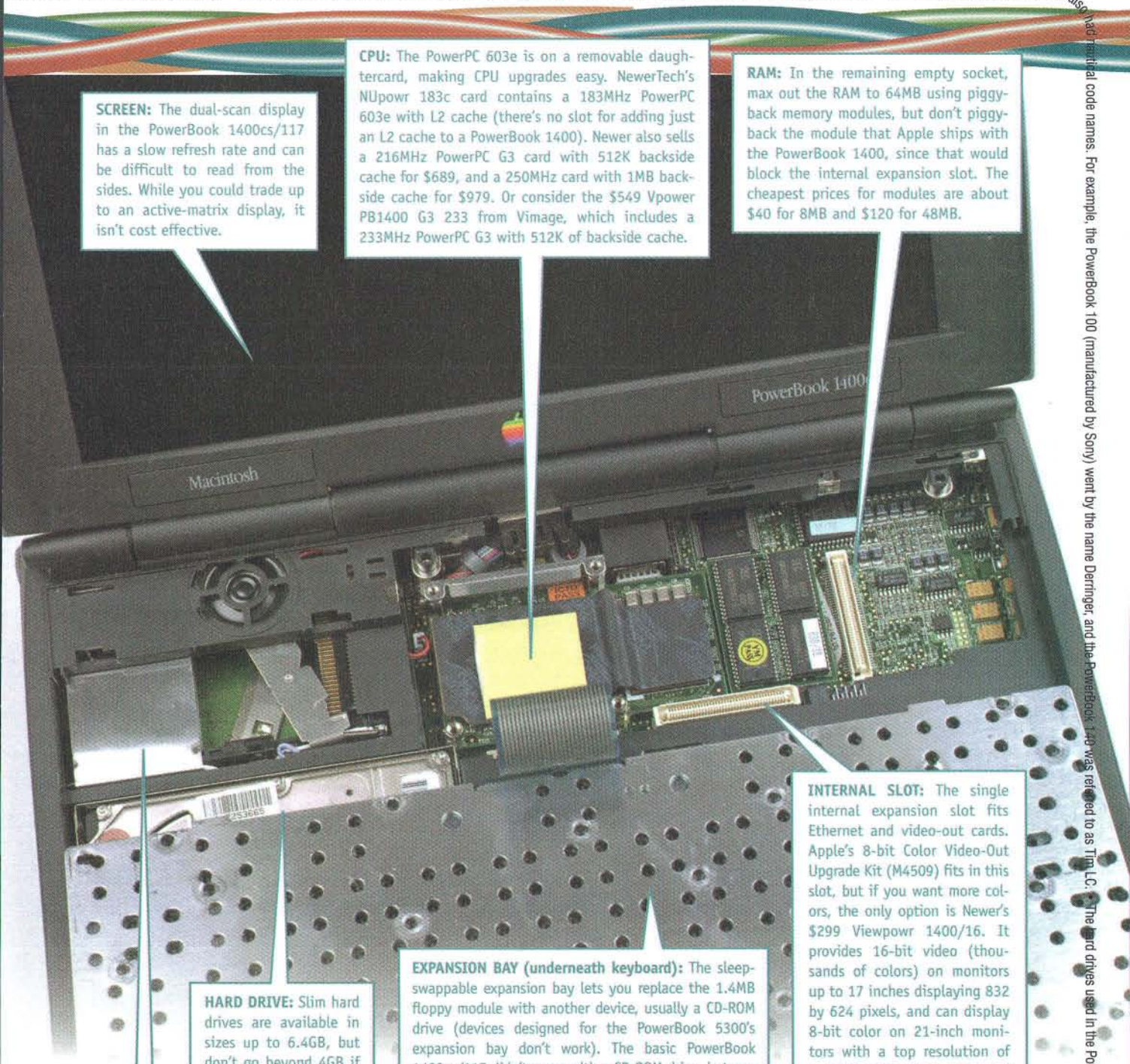
CPU: 25MHz 68030
FPU: 68882
RAM: 2MB on motherboard, expandable to 8MB
VRAM: No way
L2 cache: Not this time
Slots: Modem

170 Treatments

- **RAM:** Expand to 8MB by plugging a single 6MB, 100ns pseudostatic RAM card into the connector on the CPU daughtercard. Turn on virtual memory or install Connectix's RAM Doubler to go beyond this limit.
- **VRAM:** The 10-inch, active-matrix, monochrome LCD is capable of displaying 640 by 400 pixels. You can't replace it with a color LCD, nor can you add VRAM. The only thing you can do is replace the pencil-thin lamp inside the screen housing when it blows. Expect to pay about $10 at JKL Components (800-421-7244 or 818-896-0019, http://www.jkllamps.com).
- **MODEM:** Install an internal fax modem, such as a Global Village PowerPort Gold, or if you can't locate one, attach any external modem to the serial port on the back panel. Because of the slow serial chip, you'll be wasting your time with anything faster than 14.4 kbps.
- **FLOPPY DRIVE:** Replace the internal 1.4MB floppy drive if it goes bad. It can't be upgraded.
- **HARD DRIVE:** Either find higher-capacity replacement 2.5-inch SCSI hard drives (Other World Computing advertises a 160MB drive for $89), or buy an Apple HDI-30 SCSI System Cable and attach an external hard drive. Make sure you get a drive that provides termination power (such as all Apple-brand drives and many third-party drives), or the PowerBook may crash if you turn off the hard drive before the PowerBook.
- **BATTERY:** If the removable nickel-cadmium (NiCd) battery fades after limited use, replace it with a fresh cell for $60 from Lind Electronics (800-897-8995 or 612 927-6303, http://www.lindelectronics.com).

known by the code name Epic during its development. • The PowerBook 1400 was the first PowerBook with an optional CD-ROM drive • Steve Jobs once said, "Never trust a computer you can't lift."

und a newly introduced flat-panel display. • The code names for the PowerBook 170 were Road Warrior and Tim, the latter representing a class of sailboat. The other models introduced at the same time also had musical code names. For example, the PowerBook 100 (manufactured by Sony) went by the name Derringer, and the PowerBook 140 was referred to as Tim LC. • The hard drives used in the PowerBook 100 series were supplied by Conner Peripherals and carried the code names Elwood (40MB) and Jake (20MB), of Blues Brothers fame. • The internal modem used in the PowerBook 100 series was known by the code name O'Shanter & Bess. • The PowerBo



SCREEN: The dual-scan display in the PowerBook 1400cs/117 has a slow refresh rate and can be difficult to read from the sides. While you could trade up to an active-matrix display, it isn't cost effective.

CPU: The PowerPC 603e is on a removable daughtercard, making CPU upgrades easy. NewerTech's NUpowr 183c card contains a 183MHz PowerPC 603e with L2 cache (there's no slot for adding just an L2 cache to a PowerBook 1400). Newer also sells a 216MHz PowerPC G3 card with 512K backside cache for $689, and a 250MHz card with 1MB backside cache for $979. Or consider the $549 Vpower PB1400 G3 233 from Vimage, which includes a 233MHz PowerPC G3 with 512K of backside cache.

RAM: In the remaining empty socket, max out the RAM to 64MB using piggyback memory modules, but don't piggyback the module that Apple ships with the PowerBook 1400, since that would block the internal expansion slot. The cheapest prices for modules are about $40 for 8MB and $120 for 48MB.

INTERNAL SLOT: The single internal expansion slot fits Ethernet and video-out cards. Apple's 8-bit Color Video-Out Upgrade Kit (M4509) fits in this slot, but if you want more colors, the only option is Newer's $299 Viewpowr 1400/16. It provides 16-bit video (thousands of colors) on monitors up to 17 inches displaying 832 by 624 pixels, and can display 8-bit color on 21-inch monitors with a top resolution of 1,152 by 870 pixels. This card may conflict with stacked memory modules; contact Newer for details.

EXPANSION BAY (underneath keyboard): The sleep-swappable expansion bay lets you replace the 1.4MB floppy module with another device, usually a CD-ROM drive (devices designed for the PowerBook 5300's expansion bay don't work). The basic PowerBook 1400cs/117 didn't come with a CD-ROM drive, but you can buy one from any number of vendors. Apple eventually replaced the original Apple 6X-Speed CD-ROM Module (M4508) with an 8X unit, and ultimately a 12X drive. If you can find a fast drive, go for it, but the 6X module is fast enough for most uses. VST Technologies (978-635-8200, http://www.vsttech.com) sells a 100MB Iomega Zip drive module.

HARD DRIVE: Slim hard drives are available in sizes up to 6.4GB, but don't go beyond 4GB if you intend to use the PowerBook 1400 in SCSI Disk Mode.

SERIAL PORT/PC CARD SLOT: Add a modem in one of the two PC Card slots on the left side, which can house one Type III card or two Type I or Type II cards. With industry-standard PC cards, you can use these slots to add Ethernet, hard drives such as the Flip Disk from Amacom (http://www.amacom-tech.com), static memory, video input, or modems.

Owen W. Linzmayer (owl@bigfoot.com) attended the Mac's 1984 introduction at the Boston Computer Society and has been a Mac addict ever since. No Starch Press has just published his latest book, *Apple Confidential: The Real Story of Apple Computer, Inc.* For more information, visit Owen's Web site at http://www.netcom.com/~owenink.

Hey, Mac, What's Your Sign?

MacAddict's official astrologer takes a close look at the Mac's birth chart and reads something into it.

BY ELIZABETH HAZEL

Break out the tie-dyed shirts and love beads—the Mac is an Aquarius, baby! First presented to shareholders at the Flint Center in Cupertino, California, on January 24, 1984, the Mac was born into the sign of the New Age—peace loving, scientific, quirky, and able to attract fans from all walks of life, including scholars, musicians, and *MacAddict* editors.

UNRESOLVED MYSTERIES

As our digital friend celebrates its 15th birthday, some of the great beauties and conflicts that wrestle within its birth chart are about to be revealed. Transiting Neptune already met up with the Mac's Aquarian Sun in 1998, and the fallout will continue through the year 2000 as some of the Mac's physical and stylistic elements are altered or completely disappear. Thanks to Neptune, scientific breakthroughs will introduce new molecular substances that increase versatility to the edges of the imagination. The results of the Neptune transit are already apparent, but more unmasking of new products and a corporate focus on spinning just the right image will dominate the Mac's existence for the next two years.

Pluto moves toward natal Uranus, bringing periodic upheavals and disruptions to the Mac's origins and family ties in 1999, which means another managerial round of musical chairs is likely in the spring. (One wonders how this will bode for Jobs's interim title.) Foreign suppliers of components or assembly (especially the beleaguered Pacific Rim suppliers) will be quite unreliable due to economic and political upheavals or the forces of nature. The Mac will also suffer from delays due to regulatory agencies that sporadically hinder progress. Even now, congressional initiatives are moving through the House to regulate the Net, and further antitrust actions against Microsoft could draw Apple—willing or not—into the battle in the coming year.

Elizabeth Hazel is an astrologer and a tarot and rune reader based in Toledo, Ohio. Executive Editor Nikki Echler hangs on her every word and frequently consults her on key life decisions such as pink or red—nail polish, that is. Liz can be reached at vala@accesstoledo.com.

ILLUSTRATION BY BILL SCHWARTZ

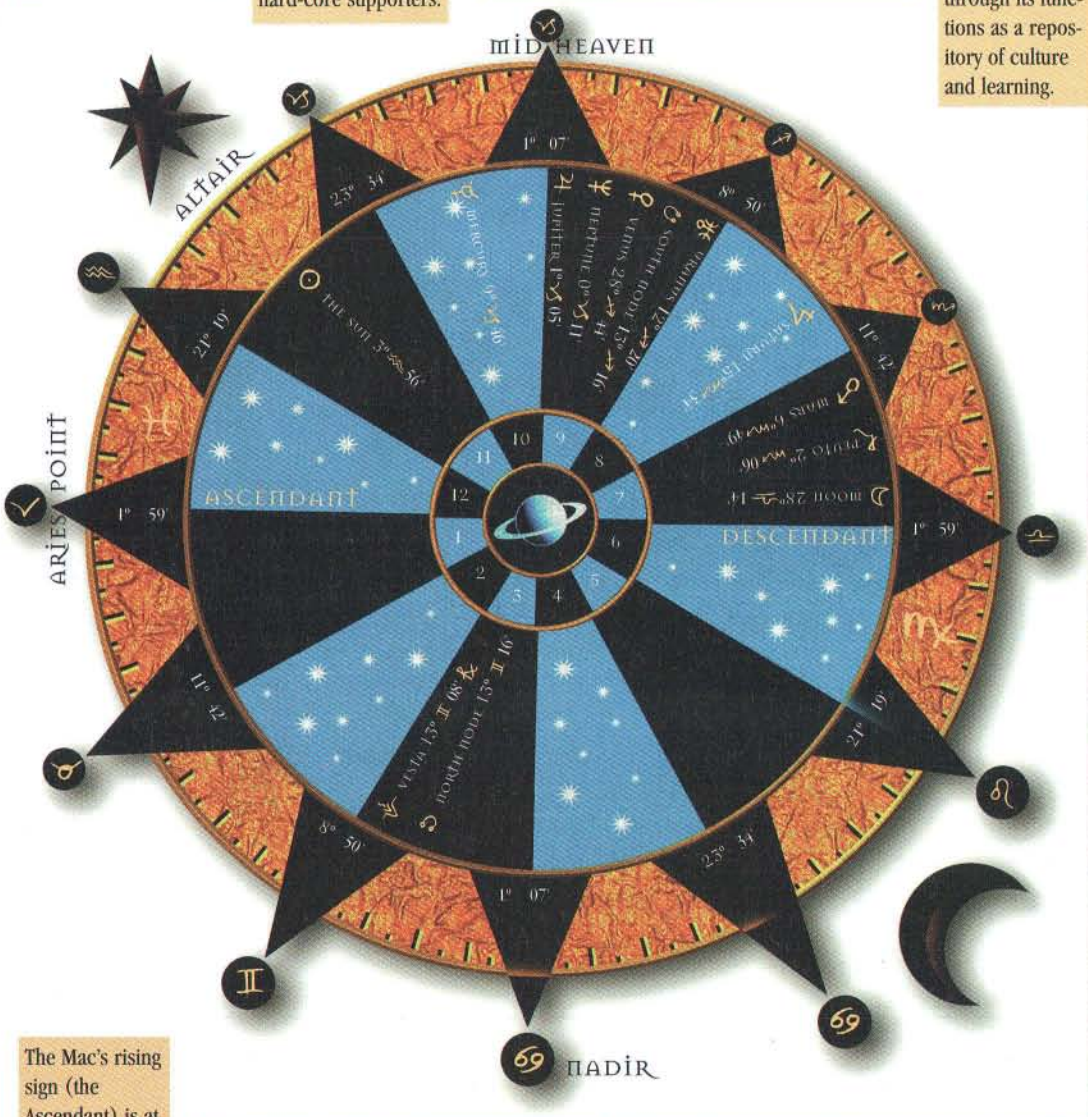
CHARTING THE MAC'S STAR QUALITIES

Jupiter and Neptune combine to focus the Mac on the arts, publishing, education, and multimedia industries.

The Aquarian sun harmonizes well with the Ascendant, making the Mac an industry trailblazer with hard-core supporters.

The Aquarian sun aligned with Altair accounts for keen instincts, but also forewarns of great rises and falls. Notorious for changes of fortune, Uranus crossed this degree in 1996 and 1997 just as Apple experienced dramatic management adjustments.

Venus is at 28° Sagittarius, indicating that the Mac is a gift to the world through its functions as a repository of culture and learning.



The Mac's rising sign (the Ascendant) is at the first degree of Aries, a degree filled with vibrant life and vigor, which gives the Mac its drive and leadership qualities.

Uranus, the ruler of Aquarius, gives the Mac an edgy and inventive quality, with the power to remake itself endlessly. The South Node's contact with Uranus reveals the Mac's dependence on electricity, which could become a problem as Earth enters a period of peak solar-storm activity within the next 10 years—potential power outage disasters are waiting to happen.

The Moon in a late degree of Libra represents Mac users: highly creative, sensitive to design, and very comfort conscious. The next three planets are the culprits setting off warning bells: Pluto, Mars, and Saturn in Scorpio portray the Mac as domineering, ruthless, brooding over life and death struggles, yet ultimately a survivor. These placements show both the die-hard possessiveness of Mac users and Apple's competitive corporate spirit.

BACK TO BASICS

The Mac's 15th birthday heralds a return to its original premise—solid engineering and revolutionary design. Resources and entrenched patterns face challenges from the power vortex, so compatibility will be a growing concern. Expect an increased emphasis on eye-catching industrial design.

A WOMAN'S TOUCH

1999 is dominated by planetary feminine archetypes, Venus and Vesta, which may indicate a woman who champions the Mac, or a feminine influence on Mac development. Venus pushes the Mac to develop a fashion sense that appeals to both youth and home markets. The love goddess Venus and the protector Vesta bode well for the Mac's resilience and flexibility in the coming year.

MACWORLD EXPO

Expect awesome displays of new hardware and software, interesting attendees, and lots to talk about. Mars in Libra, attached to the Mac's natal moon, will challenge the status-quo attitudes of Saturn during this Expo, so the opinions of many will change in favor of the Mac. Surprises are in store!

DESTINY

The Gemini North Node in the third house aligned with Vesta hints at the possible use of ceramic technologies in the Mac's processing components, or possibly a shift from electrical dependence to thermal or solar power. Vesta indicates that the Mac is a born maverick and will remain dedicated to its offbeat traditions.

HOROSCOPES

AQUARIUS (Jan. 21 to Feb. 19) Attend the MacWorld Expo on January 5—your schedule will be more demanding after January 17. Your favorite person to hate disappears from one of your newsgroups.

PISCES (Feb. 21 to Mar. 20) You'll face tough work and money choices on January 19, and potential power surges and outages at the end of the month. Back up anything important.

ARIES (Mar. 21 to Apr. 20) Your Internet contacts are productive, but don't rush a good thing—avoid confrontations on January 19.

TAURUS (Apr. 21 to May 21) A whole new world of opportunities is opening to you. Organization is critical to keeping on top of your workload—set up new software systems to help with this.

GEMINI (May 22 to Jun. 21) A powerful urge to accelerate your systems starts the new year. Crucial email at the end of January could totally change your focus, resulting in exciting travel.

CANCER (Jun. 22 to Jul. 22) Keeping work, family, and partners in equitable balance requires diplomacy, and leads to tough decisions midmonth. A clean and quiet workstation is a must.

LEO (Jul. 23 to Aug. 22) The spotlight follows you around in January—expect favors, gifts, and good reviews. It's time to break your floppy habit and get a Zip drive—don't put it off.

VIRGO (Aug. 23 to Sep. 23) You receive good news from friends this month. Leaps in technology keep the workplace hopping.

LIBRA (Sep. 24 to Oct. 23) Your ambitions lead others with hyper-inspired vision. A chat room commentary you write on January 5 starts a response frenzy. Love and friendship blossom.

SCORPIO (Oct. 24 to Nov. 22) Back up your hard drive to ensure you won't lose all of your work. You are invited to assist in planning and strategy sessions, since you are known for making shrewd purchase decisions.

SAGITTARIUS (Nov. 22 to Dec. 21) A new circle of friends emerges in your area of expertise; your opinion is solicited based on your reputation. Dust and fur are your Mac's enemies—acquire cleaning and protective gear.

CAPRICORN (Dec. 22 to Jan. 20) Relationship issues are front and center. Decide how much time you can afford to spend responding to messages. Review your system resources and eliminate the obsolete; make sure your desktop turf is well marked.

ILLUSTRATIONS AND TYPE DESIGN BY ERIK VAN BLOKLAND

A Greenhorn's Guide to TAMING WILD·WILD WEB TYPE

BY JOHN TOLLETT

Wrangling text on a printed page is like a walk through the stables for any experienced word herder who grew up with the likes of PageMaker and the LaserWriter. From the start, Mac addicts have been blessed with the tools to create Grade A text, kerned, tracked, and leaded to perfection. Finesse flew out the window, however, with the onslaught of the World Wide Web, a vast new publishing arena with a whole new set of rules.

Before you stampede online and make a big old arse out of yourself using yesterday's type techniques, you'll want to check out our guide to everything you'd ever want to know about designing with fonts on the Web. Publishing old-timers and greenhorns alike will learn the tricks behind good-looking Web pages and foolproof fonts. We take you from basic HTML tricks to more advanced techniques and show you how to make your fonts fit like a horseshoe on the Web. Now move along, li'l partner, 'cause time's a-wasting.

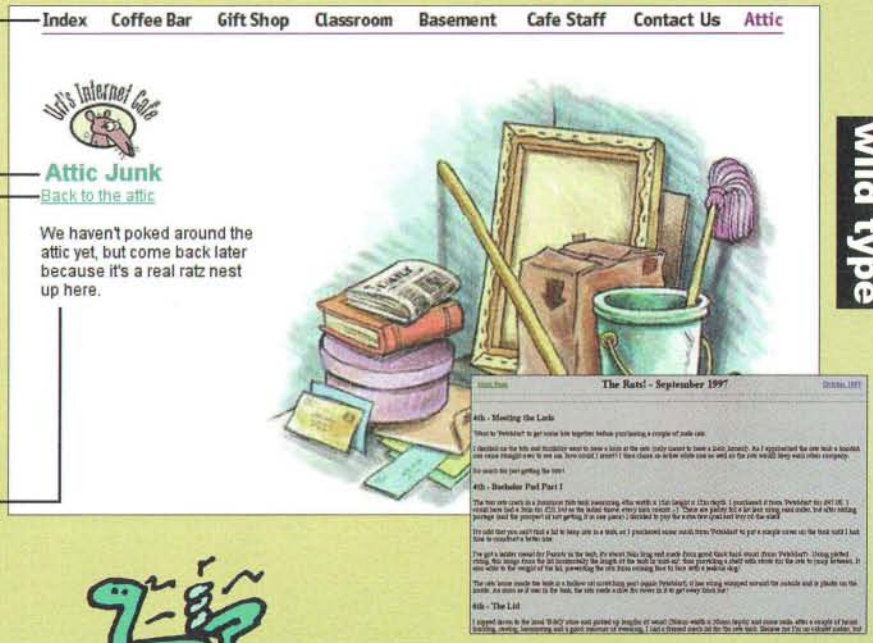
USING A FEW SIMPLE TYPE-DESIGN TECHNIQUES, you can add tremendous appeal to your Web page. Contrast the Url's Internet Cafe page with the simple HTML text page on rats, and decide for yourself—which would you rather read?

A) Use simple text graphics for navigation. These elements present attractive text without leaving anything up to the browser.

B) With <font face> and <font size> tags, you can facilitate flow and add hierarchy to regular HTML text.

C) Give your hyperlinks the notice they deserve by differentiating their size and color from the body text.

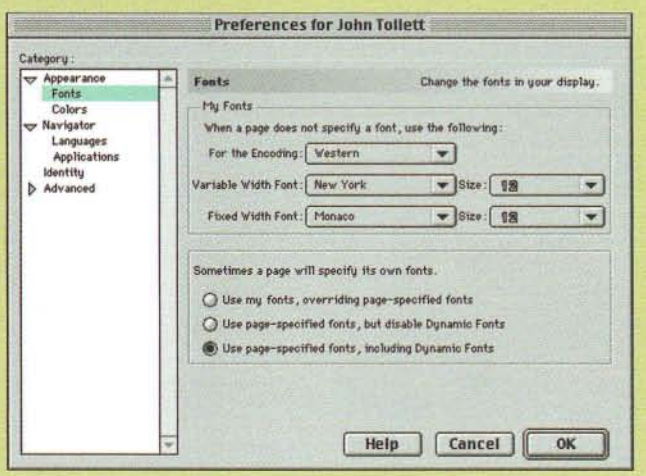
D) Keep your text lines short to enhance readability. You can add a tad of pizzazz using a different font than the browser's default—just make sure you're consistent.



The Golden Rule: The Browser Is Always Right

The Web browser—not the designer—rules supreme when it comes to Web page appearance. Perhaps you've seen a Web site that gives instructions on how to set *your* preferences so *its* pages look right. The most common reaction to this is, "Hey, buddy, I've got some preferences for you right here." To avoid alienating the masses, Web designers need to be accommodating, not demanding. Why? HTML is at the heart of the World Wide Web. As the skeleton on which Web pages hang, it's unavoidable. And although you can post text on Web pages as graphics (which gives you a great deal of control over how your type appears), the vast majority of text out there is of the simple HTML variety. HTML text may give many Web sites that unfortunate low-rent look, but it also loads faster than lightning and lets you put massive amounts of information on a page. So even though HTML text is slightly ugly, it's here to stay, and to make the best of it you need to be aware of something that will influence its appearance—browser defaults.

Browsers such as Netscape Navigator and that *other* browser have default type settings that individual users can change. Let's get familiar with the settings in Navigator so we know what surfers see when they load pages. (Internet Explorer users take note: The font settings in your browser of choice are similar, so you should be able to follow along without any trouble except an inexplicable sense of gnawing guilt.)



THIS LITTLE DIALOG BOX controls how the type on your Web pages will appear to others. Afraid? You should be.

To begin, launch Netscape. Choose Preferences from the Edit menu. A Preferences dialog box, like the one shown here, pops up.

Click the reveal triangle next to Appearance to expose the Fonts and Colors submenus, then click Fonts to open the Fonts Preferences dialog box. Your choices here will to a large degree determine what other people's Web pages will look like in your browser. Unfortunately, other people's choices here will determine to a large degree what *your* Web pages will look like in *their* browsers.

With this reality in mind, design your Web pages using these assumptions: Most of your viewers have not changed their default font settings, and those that have probably made only relatively minor adjustments, such as altering the Variable Width Font default from 10-point Times to 12-point New York. Still, minor changes add up. If you designed your Web page using a default body text of 10-point Times, and someone views that page in a browser whose Variable Width Font default is set to 12-point New York, the text will flow and wrap much differently in that person's browser than in yours. So while you can use any font you happen to have loaded on your Mac as the default, don't get too creative if you want others to see your Web pages the way that you do.

TIP: If you use anything other than browser-default fonts, specify fonts that resemble the default, or risk design disaster when folks who always see sites with their own fonts view your page.

The bottom half of the Fonts Preferences dialog box gives you several other options. Enabling the Use My Fonts, Overriding Page-Specified Fonts button tells the browser to ignore whatever fonts the page designer has specified in favor of your chosen defaults. You can hope that folks haven't selected this button, but don't count on it. After all, if you specify a font other than the default font for headlines, subheads, or captions, this selection will make the text appear in the default font instead.

Round Up Your Own Fonts

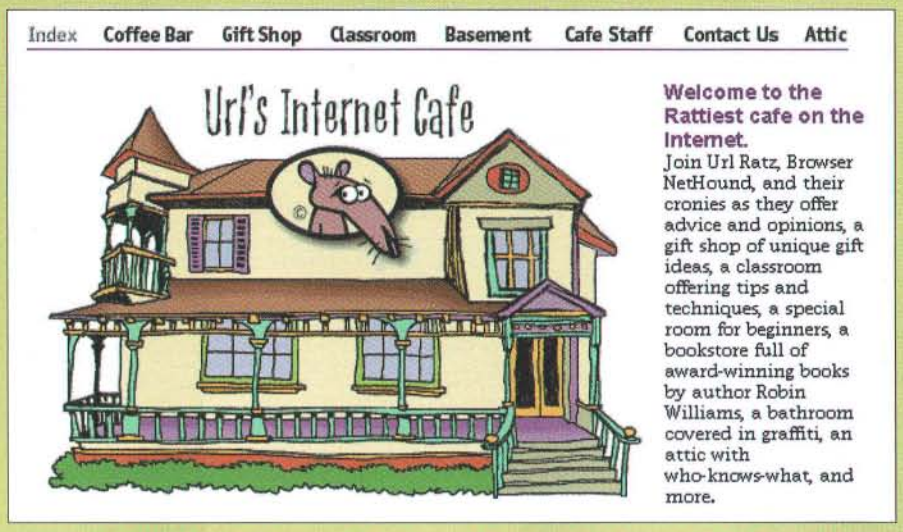
What's that? You can specify a font for a Web page? Yep. You sure can. With the simple <font face> tag, you can tell viewers' browsers to use any fonts you want. Of course, those browsers will only listen if their owners have selected the Use Page-Specified Fonts option *and* have the fonts you specified installed. Otherwise, you're up dang-that's-ugly-design creek without a paddle. But if you're willing to take these risks (go ahead, we double-dog dare you), here's how the <font face> tag works.

On this Web page, the body text is set in the default font, 14-point New York, but the headline is set in Geneva bold. The HTML code looks like this:

```
<font face="geneva, arial,
helvetica" color="#660066"><b>
Welcome to the Rattiest cafe on the
Internet.</b></font>
```

This HTML code tells your Mac to look for Geneva first, then Arial, and finally Helvetica. Your browser will use the first of these fonts that it finds. In the unlikely event that you have none of these fonts on your computer, the text appears in whatever font you've set as the default. Helpful hint: Use WYSIWYG Web-page authoring applications such as Macromedia Dreamweaver and GoLive CyberStudio to eliminate the tedium of typing all of that <font face> code yourself.

City-named fonts were designed for maximum legibility on a computer monitor. Even though Times is a nice variable-width font, New York (the screen-display version of Times) is much more legible on a computer monitor because it renders cleanly within the screen's limited pixel environment. And while Courier is a decent, hard-working, fixed-width font, Monaco easily outscores it onscreen. If you agree that city-named fonts are more legible, you may want to edit the <font face> tag so that a city-named font appears first in the code (for example, <font face="geneva, arial, helvetica">). However, many browsers don't use city-named fonts as their defaults, so keep that in mind when using them.

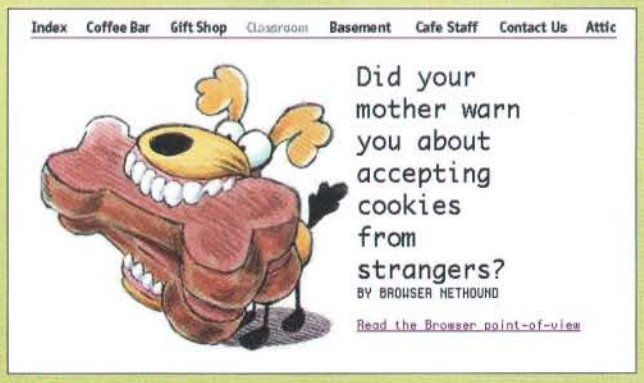


USING FONTS OTHER than the browser defaults can add emphasis and contrast to a Web page. The cool graphic doesn't hurt, either.

Size Isn't Everything

You can specify not just font set and fixed- or variable-width fonts, but also font size—relatively speaking. While you can't specify a set size, such as 12 point, you can specify a relative size, such as two points smaller than the default size. Using relative font sizes is a great way to add a sense of flow and hierarchy to your pages.

To create different font sizes, just use the <font size> tag. When you put HTML text on a page and include the <font size> tag to specify the size as Larger, Smaller, +1, -1, +2, -2, and so on, remember that these sizes are relative to the default font-size settings in individual browsers. It's best to use a conservative approach when specifying font sizes—not too large and not too small. If the size jumps up too much, you may end up with monster characters on some browsers; if it drops down too much, your fonts may be too tiny to read. Plus, try to limit the number of different font sizes you use on your site as well; too many will confuse and overwhelm your viewer.



BOTH OF THESE PAGES use HTML code calling for a +3 fixed-width font. What's the difference? The browser at the left is using a fixed-width default font size set at 18 points rather than 12 points.

Lessons in Legibility

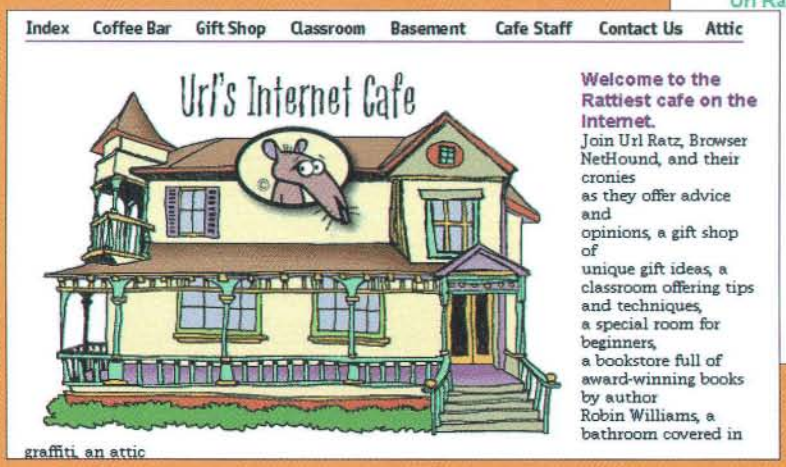
Reading tons of HTML text can be harder on your eyes than watching Newt Gingrich frolic 'round the Hill in lacy lingerie. To make text as pleasing to the pupil as possible, adhere to these guidelines:

Don't break lines manually. You'll only hurt the ones you love.
If you've ever worked with page layout programs, you've probably massaged the text by forcing lines to break at certain places. Try that technique on a Web page and your carefully executed line breaks will bust a move, shifting all over the page. If you've designed the page with a 10-point Times default, and someone with different default settings sees the page, your guest will get a Web page with a different view—including nasty line breaks in all the wrong places. It's better to accept less-than-perfect breaks and just let the text go with the flow.

Shorter line lengths are easier to read.
It's not as if you're going to run out of room for words on a Web page, so why crowd the browser with a wall-to-wall text block? Viewers find scrolling down a clean, thin column of type much more appealing than wading through an imposing barrage of text.

Use bolds and italics sparingly.
Italic text on a monitor is as much fun to read as Morse code. Use it sparingly. Boldface type is useful for emphasis and contrast, but using lots of it is similar to screaming at the person next to you. So mind your manners, lower your voice, and be a little less bold.

Create contrast between the type and the background.
No matter what font you use or how large it is, if there's not enough contrast between the type and the background, you've committed typographic high crimes and misdemeanors. It's impossible to read, butt ugly, and usually a by-product of a love affair between a designer and a background pattern that the rest of the world hates.



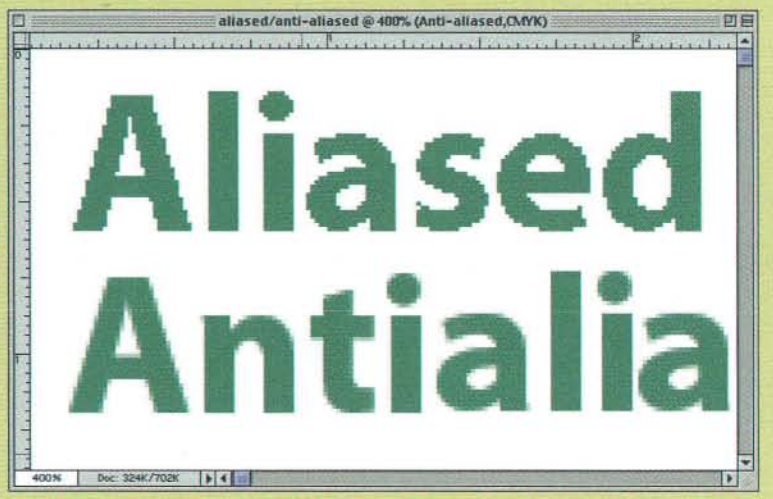
FORCING LINE BREAKS may improve the page layout when it's viewed in *your* browser, but other browsers may not display the page exactly as yours does.

SHORTER LINE LENGTHS are easier to read. Don't make your text go the distance or *you'll* feel the burn.

Get Graphic

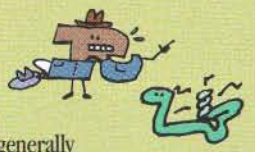
If you want foolproof type that looks good in any browser, you need to turn it into a full-fledged graphic. Create your text in a bitmap graphics program like Photoshop, then save it as an antialiased graphic, and it will appear smoother than the aliased, jaggy type HTML produces. Another benefit of designing with text graphics is that you're not limited to using standard fonts and Web-safe type techniques—only your own imagination limits your creative boundaries.

Text graphics look great, but as anyone who's had time to take a coffee break while waiting for a header graphic to show up knows, they take much longer to download than HTML text. Considerate designers should respect viewers' bandwidth issues and reserve this technique for small items that carry lots of impact, such as headlines, subheads, and pull quotes. If you try doing this with an entire page of text, no one will wait three days for the download—not even your mother. Just ask her.



ALIASED TYPE, such as HTML text, has rough, jaggy edges. You can antialias text created in a graphics program so that the edges of the type appear smooth.

Find a File Format



When you create text graphics for the Web, you generally just churn out one of two types of bitmapped graphic files: GIFs and JPEGs. (Sure, PNG graphics exist, but realistically, who's using them? All they do is limit browser choices and keep companies like Adobe from paying royalties on the GIF algorithm. PNG offers no benefits for designers or Web surfers.) Both GIF and JPEG file formats can compress files to a fraction of their original size for quick downloading, but each format has its own superpowers and Kryptonite crosses that suit them for separate tasks.

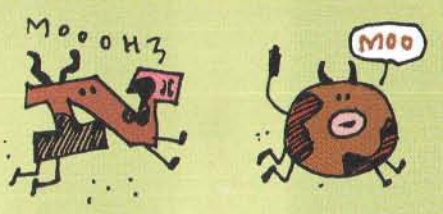
The GIF format works well for compressing files that have flat colors in them, such as text headlines on flat-color backgrounds. GIFs are limited to 256 colors, but small navigation buttons or subhead files may have as few as four colors and weigh in at less than half a kilobyte!

Reserve your use of JPEG to special type occasions. JPEGs can contain millions of colors, so they work best with images that have a multitude of color variations, such as color photos, illustrations, and text enlivened with special effects. If your text graphic only has a few colors and you save it as JPEG, you'll notice artifacts—leftovers from JPEG compression. If you save it as GIF, the colors will remain solid, without any noise.

When you save a JPEG file, you can bump up the amount of compression you apply to the image to make the file size smaller. Be aware, however, that the smaller you make the file, the worse the image will appear. JPEG compression is what we designers call "destructive"—that is, you lose some of the image's data in exchange for a smaller file size.

THE GIF FILE FORMAT is ideal for flat-color graphics like these. When we saved the Gift Shop navigation button as a GIF file with 8 colors, it shrank from 9K to 297 bytes, a mere 3 percent of the original file size!

The Antialiasing Exception



When text gets small, antialiasing turns on you—from friend to enemy, just like that. The same antialiasing that makes larger type look good makes small type blurry and unreadable. A single character of small type may only be a few pixels wide, so when the antialiasing process blurs several pixels on the edge of the type to smooth out the rough edges, the entire word may blur.

IF YOU CREATE colorful text with special effects and fancy, photorealistic buttons, then you'd best save your image files as JPEGs or they'll look like dirt—ugly dirt.

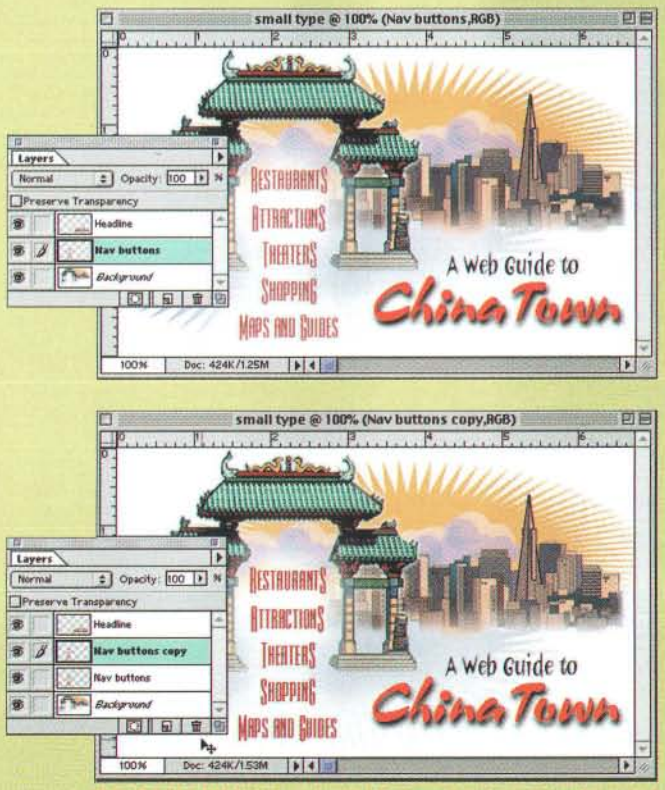
Navigation buttons are especially vulnerable to smudging, since designers often make them with small type to conserve page space. As with every difficult Web design problem, there are plenty of easy solutions. Here's one. Create a graphic with small type in Photoshop, then duplicate the layer that the type is on. Notice that the double layers make the type appear more opaque and dense. Duplicate the layer again for an even bolder effect. If you're still not happy, apply a small amount of Unsharp Mask to the file by choosing Unsharp Mask from the Filters Menu. This should make the antialiasing less blurry. Then flatten the image and save it as a GIF or JPEG file. The resulting antialiased graphic will still be readable.

Another way to avoid smudging small fonts through antialiasing is to pick the right fonts in the first place. Fonts that have uniform, medium-weight horizontal and vertical strokes, such as Myriad, work best for very small type.

TIP: The Unsharp Mask dialog box in Photoshop has three adjustment sliders. The Amount slider determines the contrast between pixels; set it between 50 and 120 for Web images. Use the Radius slider to choose the number of pixels the Unsharp Mask will affect around the edge; set it between 1 and 2 for Web images. The Threshold slider, which helps avoid sharpening of photographic grain in high-resolution scans, also screens out some of the noise leftover from JPEG compression. Set the Threshold to 0 to stop problems with sharpening JPEG artifacts.

You may need to create a graphic with type so small, nothing can save it from being antialiased to death. As a last resort, unclick the Anti-Aliased button in the Type Tool dialog box when you create the graphic. A readable aliased graphic is better than an unreadable antialiased graphic.

John Tollett is the coauthor of *The Non-Designer's Web Book*, published by Peachpit Press. A designer and illustrator, he works—and skis—in Santa Fe.



IF THE TYPE ON YOUR navigation buttons is too weak for the naked eye to see, duplicate the Nav Buttons layer to make the type appear bolder and more opaque.

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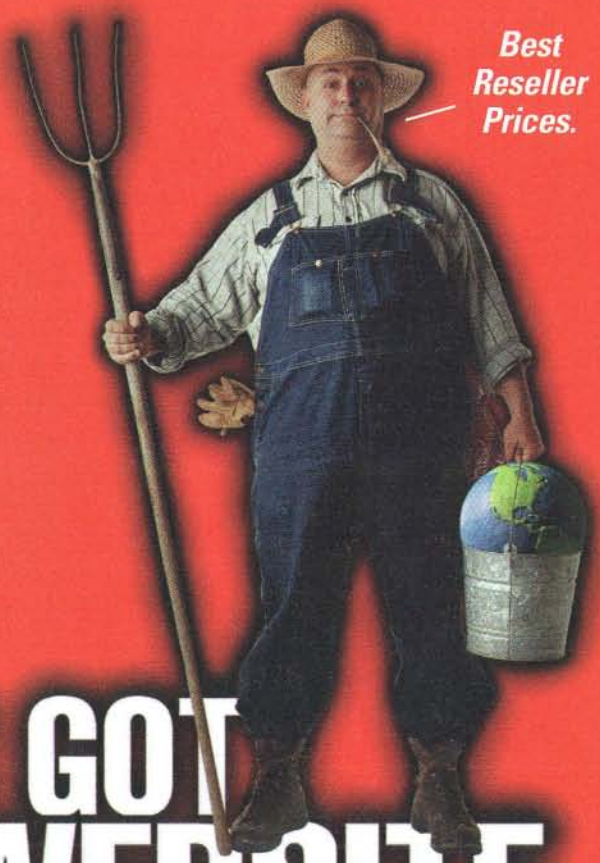

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reviews

We reviewed and rated these products—before we sipped the eggnog.

Norton Utilities 4.0 vs. TechTool Pro 2.11

FREAKIN' AWESOME
The most valuable products, the coolest gizmos.

SPIFFY
A solid offering. Overall a good investment.

YEAH, WHATEVER
A few good features, but generally a waste of time and money.

BLECH!
We hate to even blotch our pages with the thing.

FIND THE 2.11 updater for TechTool Pro on The Disc.

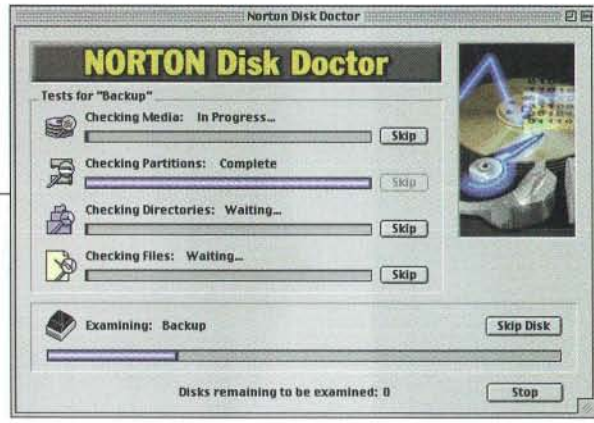
UTILITIES

Norton Utilities 4.0

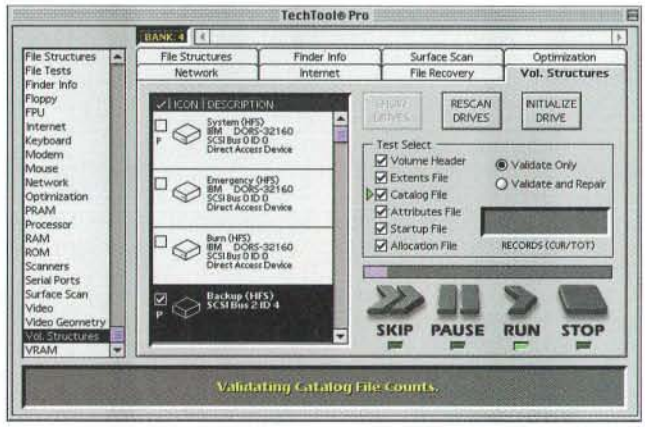
COMPANY: Symantec
CONTACT: 800-441-7234 or 541-334-6054, http://www.symantec.com
PRICE: $99 (SRP)
REQUIREMENTS: Power Mac, System 7.5 or later, 16MB of RAM, 25MB of free hard disk space, CD-ROM drive

TechTool Pro 2.11

COMPANY: MicroMat Computer Systems
CONTACT: 800-829-6227, http://www.micromat.com
PRICE: $99 (SRP)
REQUIREMENTS: Mac II or later, System 7.1 or later, 5MB of RAM, 4.5MB of free hard disk space, CD-ROM drive



FOUR SIMULTANEOUS TESTS are almost too much! But it is kind of cool to see them all running at once—or nearly at once.



IF YOU'RE LOOKING TO BE UBERGEEK, you'll want to switch to TechTool Pro 2.11's expert interface. Yup—you really can use it to check your modem and serial ports.

Competition is good, right? In the field of hard disk utility packages, Symantec's Norton Utilities has reigned practically unchallenged for a long time—that is, until Apple implemented HFS+ (or Extended Format). Symantec took several months to make sure that Norton Utilities for Macintosh was compatible with this new volume format. MicroMat jumped on this delay and released TechTool Pro 2.0 to go head-to-head with Norton Utilities. TechTool Pro 2.0 was the first on the scene with HFS+ repair capabilities, but it also had some bugs—we lost a hard drive's worth of data because of a bug involving TechTool, Plus-Maximizer, and a very full HFS+-formatted hard drive. MicroMat, without knowing we were reviewing its product, paid for the drive to be shipped to its offices, recovered the data, and used the information to fix the bug in the next release, TechTool Pro 2.11 (which added file and disk optimization). In the meantime, Symantec released Norton Utilities for Macintosh 4.0, which finally includes HFS+ support. The two suites are now roughly equal—they both understand HFS+; do disk repair, optimization, and file recovery; and have bootable CD-ROMs for those really bad times.

We decided to pit the two against each other in a steel-cage death match to find out which would emerge victorious. The winner would be showered with gifts and praise; the loser would be taunted until our throats were sore—or something like that. We used each utility under a variety of conditions, checking out the disk-structure repair, optimization, file recovery, and features unique to each utility to determine the champ.

The Incumbent

Norton Utilities is the granddaddy of Mac disk utilities (with more than 15 million units sold), and as such it gets the first whack. Version 4.0 has a new interface that keeps the traditional Mac look and feel while providing a few new features. Norton Disk Doctor now does tests in four simultaneous threads, which gives the illusion of added speed (whether or not this adds any real speed is difficult to say). Norton Utilities 4.0's Disk Doctor does thorough diagnostics, finding a few minor errors that TechTool Pro missed, such as improperly set bundle bits and files with corrupt resources. It can also repair RAID volumes, which TechTool Pro 2.11 can't.

Other Norton Utilities for Macintosh 4.0 features we like include the CrashGuard extension (although MacsBug can do some of what it does for free) and the nice array of companion utilities that do file recovery, disk editing, and benchmarking.

And da Winner Is...

We compared Norton Utilities 4.0 and TechTool Pro 2.11 in several areas and declared a winner in each category.

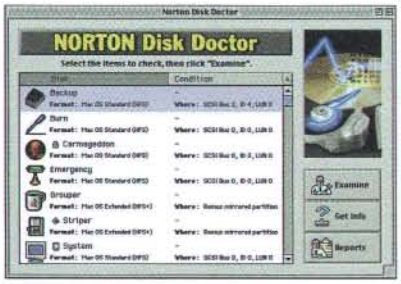
Feature Winner

- **System requirements:** TechTool Pro 2.11. It takes less disk space, less RAM, and it runs on 680X0 machines. Norton Utilities for Macintosh 4.0 is bigger (more disk space, more RAM) and doesn't run on 680X0 Macs.
- **Features:** Norton Utilities for Macintosh 4.0. More isn't necessarily better. Although TechTool Pro 2.11 has more hardware diagnostic features, Norton Utilities 4.0's selection is more appropriate for most users' basic needs.
- **Disk utilities:** Norton Utilities for Macintosh 4.0. Although both applications offer a comprehensive suite of volume repair utilities, in our tests Norton Utilities for Macintosh 4.0 was able to catch a few minor errors (involving creation dates and bundle bits) that TechTool Pro 2.11 missed.
- **Optimization:** A tie. The need to optimize disks is pretty minimal, except when it comes to CD-ROM or DVD mastering. Norton Utilities offers more options when it comes to how the final optimization looks, but in the real world both applications do a fine job.
- **Diagnostics:** TechTool Pro 2.11. Here, Norton Utilities for Macintosh 4.0 can't compete. TechTool Pro 2.11 checks *everything* in your Mac—even the keyboard and mouse. The coolest part of this? TechTool Pro 2.11 can tell what memory you have installed in which slots, and whether or not that memory is interleaved. Now *that's* useful information when it comes to making your Mac perform at peak speeds.
- **Interface:** Norton Utilities for Macintosh 4.0. Building on its previous interface, Norton Utilities for Macintosh 4.0 presents an easy-to-navigate set of main screens that still hold a lot of power. TechTool Pro 2.11's interface ranges from simple to complex without ever quite achieving a great Mac look and feel (we preferred TechTool Pro 2.11's simplest interface unless we were looking to run some serious hardware diagnostics).
- **Data recovery:** A wash. Data recovery is tricky business at best, and both utilities seemed to do a decent job of recovering lost files.

reviews

The Challenger

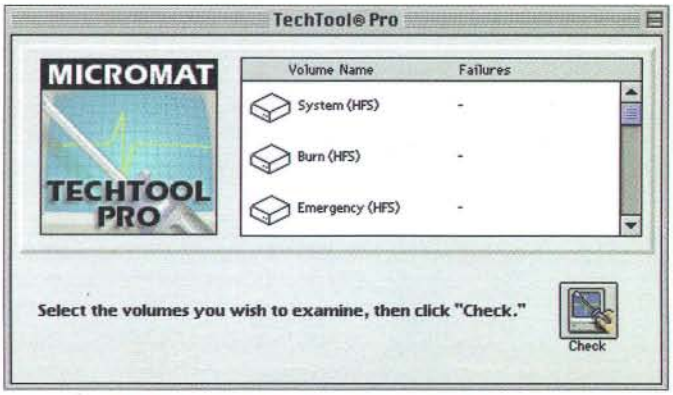
MicroMat's TechTool Pro 2.11 is the upstart challenger to Norton's throne. Version 2.11 fixes some of the bugs from the previous version, and it adds disk optimization and a new interface. The disk optimization works well (although without as many of the dubious optimization profiles as are in Norton Utilities for Macintosh 4.0). The added simplified interface is just what the utility needed (perfect if you want to do a quick check of your Mac's hard drive). TechTool Pro 2.11 features extensive hardware diagnostic options—almost too many options. On the one hand, you can use TechTool Pro 2.11 to find out what RAM is installed in which slots, and whether or not it's interleaved; on the other hand, who really needs to check whether a mouse button is clicking or not? The program's ability to do a complete PRAM zap is a small but important feature. Even more important, TechTool Pro 2.11 runs on 680X0 Macs—a market that Symantec no longer supports with version 4.0.



THE GRANDPARENT GETS A NEW LOOK—but those who know and love the older versions won't get lost. Just select the appropriate volume and click Examine to start.

The Final Word

Recommending one utility over the other isn't easy. For most folks, Norton Utilities for Macintosh 4.0 is probably the better buy. Its simple multithreaded interface, combined with slightly more-thorough repair abilities (and its ability to work on RAID volumes), gives it an edge for users who want a reliable disk utility. But for those working on a pre-PowerPC Mac, TechTool Pro 2.11 is the tool to have. It's the only utility of the two that works on 680X0 Macs, and it has much smaller system requirements, making it perfect for those without a lot of headroom on their systems. TechTool Pro 2.11 also includes a hardware test suite that Norton Utilities for Macintosh simply can't touch, which makes it a great candidate for those who need a *complete* diagnostic utility.—*David Reynolds*



TECHTOOL PRO 2.11'S NEW INTERFACE looks strangely familiar and comfortable, almost as if we've seen it somewhere before.

Norton Utilities 4.0

GOOD NEWS: Bootable CD. Efficient multithreaded program. Well-designed interface. Reliable problem solving.
BAD NEWS: PowerPC only. Steeper system requirements.

TechTool Pro 2.11

GOOD NEWS: Bootable CD. Works on both 680X0 and Power Macs. Smaller system requirements. Tests every conceivable component.
BAD NEWS: Advanced interface can be confusing. Doesn't recognize RAID partitions.

in review

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MacMagic

HARDWARE

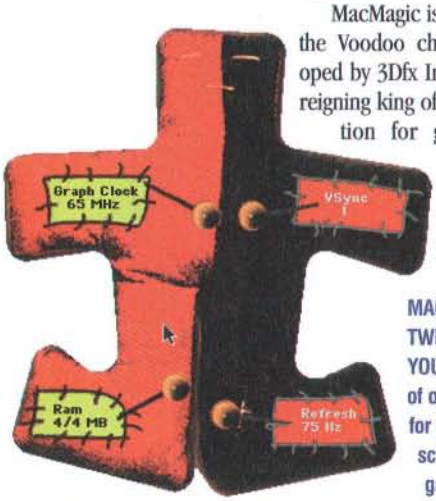
COMPANY: VillageTronic
CONTACT: 800-932-6442, http://www.villagetronic.com
PRICE: $99 (SRP)
REQUIREMENTS: PCI-based Power Mac, System 7.5 or later, 32MB of RAM, 2MB of free hard disk space, one free PCI slot, Glide- or RAVE-enabled games

Photo by KB

MACMAGIC IS ALL DRESSED UP in black with 3D to go. Its Voodoo power puts an acceleration spell on your Mac.

When the next-generation 3D shooter Unreal burst onto the gaming scene, it brought many Mac gamers' hardware to its knees, forcing CPUs and onboard video to scream for help. These days, the software rendering mode in games doesn't cut the mustard, and with titles moving toward mandatory hardware acceleration, you need all the acceleration you can get. In Mac gaming, the price of awesome 3D has traditionally been exorbitant, but the product with the right price has arrived. VillageTronic's MacMagic means affordable 3D.

MacMagic is built around the Voodoo chip set developed by 3Dfx Interactive, the reigning king of 3D acceleration for games. 3Dfx Interactive developed the Glide API the majority of 3D titles use. Voodoo is tried and true, and remains the preferred hardware of gamers, even those on that other platform.



MACMAGIC TWEAKER PUTS YOU IN CONTROL of optimizations for your favorite screaming 3D games.

The faster Voodoo2 is available for the Mac, which raises questions about the difference between the original Voodoo and Voodoo2. A Voodoo2-based card sports an additional texture processing unit (Voodoo has only one) that allows for single-pass multitexturing (the two texel units process textures in parallel and in one cycle). You're thinking more is better, and there's no doubt that Voodoo2 is faster and cranks out more pixels. However, at the time of this review Unreal is the only Mac game that features complex textures, so it's the only place the $299 Voodoo2 card really shows its stuff.

In addition to its affordable price, an even more compelling reason to prefer MacMagic is its 8MB of video RAM. That's the same amount the $299 Voodoo2 card features. 8MB of VRAM allows gameplay at 800 by 600, so if MacMagic does that, why buy a card that costs three times as much? We tested MacMagic on both a 233MHz Power Mac G3 and a 603e-based Power Mac. Specifically, we played two games that support 800 by 600 resolution—Unreal and a beta of the upcoming Myth II—and MacMagic handled both beautifully. That's a lot of value for the price.

For hard-core gamers with an insatiable need for speed, MacMagic includes MacMagic Tweaker, a software tweaker that lets you optimize settings for each game. You can change Voodoo's clock speed, the swap buffer interval for vertical syncing with a monitor, the texture memory allotment, and the frame refresh rate (depending on your monitor's capabilities). If you play with the swap buffer, for example, you allow MacMagic to draw frames to the screen buffer as fast as it can, which increases frames per second—the ideal that core gamers constantly chase. The best thing about MacMagic Tweaker is that it enables you to save settings for each game, so you retain hard-tested optimizations for your particular Mac. VillageTronic even installed heat sinks on the Voodoo chip set in case your tweaks generate a lot more heat than the chip normally would.

Installation is a piece of cake. The procedure takes 10 minutes, and you can immediately enjoy games such as Unreal, Myth, Tomb Raider II, and old faves such as Quake and MechWarrior II. Plus, all the upcoming action games will feature either Glide or RAVE acceleration, so MacMagic is perfect for an expanding game library.

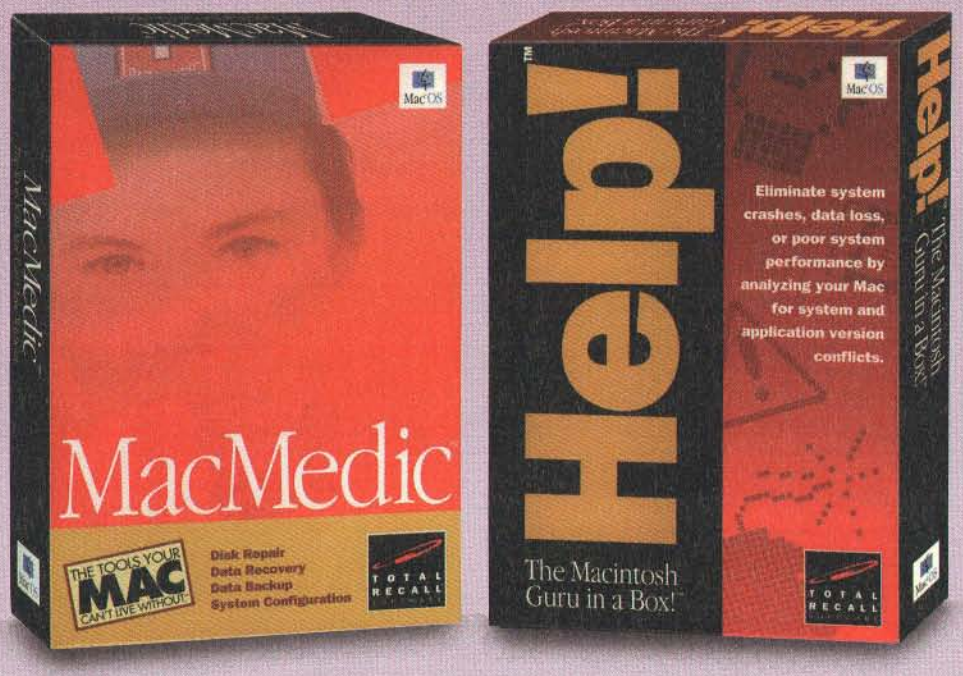
MacMagic's Voodoo-driven displays of light and shadow leave the pixel-ridden software rendering mode in the dust. There's no going back to pixel land. However, hardware acceleration has one major drawback: its dependence on CPU speed. No video card will speed up an aging CPU. To reach maximum polygonal pleasure, you need the combination of a fast Mac and MacMagic.—*Jennifer Ho*

WHICH LARA WOULD YOU RATHER SEE?

PIXELS ARE FOR PHOTOSHOP, not for kick-ass games. Check out the before and after and see for yourself.

GOOD NEWS: Unmatched price-performance ratio. Excellent Glide and RAVE acceleration. Software tweaker allows tuning of card's output for maximum polygonal pleasure.
BAD NEWS: Voodoo chip set is CPU dependent, so it can't help a slow Mac.

Antifreeze for Your Mac



★★★★★

From Total Recall, the makers of SpaceMaker

"SpaceMaker is definitely the ideal method to convert your disks to HFS+. Hands down the best."

The Macinstosh News Network
http://www.macnn.com

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Lode Runner 2

FUN & GAMES

COMPANY: MacSoft
CONTACT: 800-229-2714 or 612-509-7600, http://www.wizworks.com/macsoft
PRICE: $29.99 (SRP)
REQUIREMENTS: Power Mac, System 7.5.5 or later, 16MB of RAM (32MB recommended for network play), 43MB of free hard disk space, 2X CD-ROM drive, monitor capable of 16-bit color

WACKY WORLD IS ONE OF FIVE surreal worlds you inhabit as a lode runner going for gold. It's sort of like an Escher print on acid.

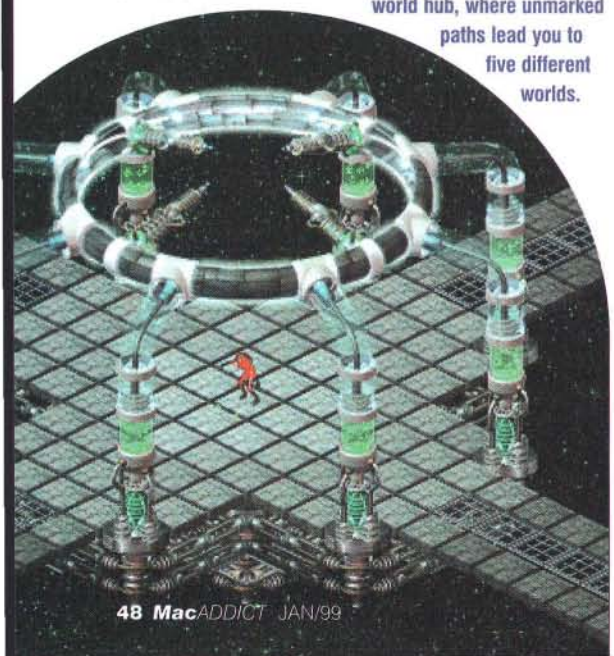
MACADDICT DOES NOT condone drug use in any way, kids. Drugs are bad, and you are a bad person if you use them.

FIND A DEMO of Lode Runner 2 on The Disc.

The legendary Lode Runner was a best-selling game on the Apple II and became one of the most popular video games on several other platforms—Commodore 64, Turbo Grafx-16, and Nintendo, to name a few. Its challenging, addictive gameplay not only made it a success, but also a classic in video game history. Now, 15 years later, Lode Runner 2 has emerged, and what a remake it is! Nostalgic gamers will enjoy the return of the original game's key elements, such as the dig and the climb. The new 3D, isometric environment with cool-looking, colorful levels and graphics appeals to newcomers and pumps up gold-hunting, enemy-dodging, precisely timed action.

SUPERFUTURISTIC JAKE AND JANE go for the gold while evading badass monks.

In Lode Runner 2, as either Jake or Jane, your goal is to pick up every piece of gold on a level so you can advance to the next one. There are more than 150 eye-popping levels spanning five worlds: Industrial World, Mona World (dedicated to da Vinci's famous subject), Wacky World, Jungle World, and Gear World. Gathering gold sounds easy, doesn't it? It's not. You have to solve tricky puzzles to get the gold while evading evil monks who want to pummel you to death.



YOU FIRST VENTURE into the unknown at the world hub, where unmarked paths lead you to five different worlds.

Gameplay is quite challenging because of all the puzzles. The Welcome level to each world is a piece of cake, but the levels that follow vary in difficulty, and some are excruciatingly hard. Flip a switch the wrong way and you unleash an evil monk onto your path. Dig a few blocks and drop down only to discover you're trapped. If your timing isn't precise, a monk catches you, then beats you into a pulp—it's not a pretty sight—or a bomb you just set blows you up. Navigating is easy enough, but when all those things are happening simultaneously and you're always trying to think two or three steps ahead, you can go positively nuts. Once you figure out a tough puzzle, though, it's as if a ray of wisdom penetrates your entire being. For that reason Lode Runner 2 keeps you wired and is better than the best espresso-induced caffeine high.

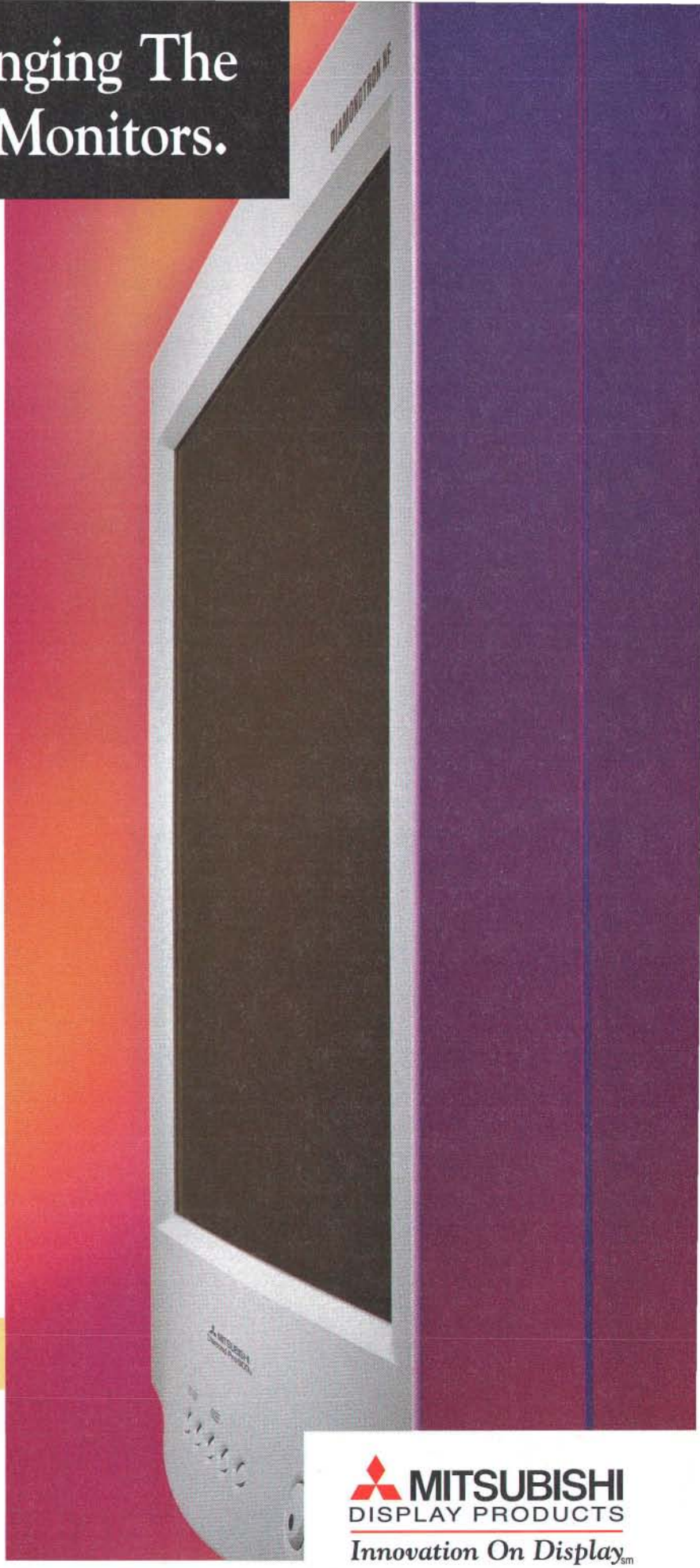
Going for gold level after level may seem repetitive, but Lode Runner 2's eye candy and surreal levels keep you buzzed. Even after you master certain skills, each level presents a unique combination of puzzles that requires logical deduction and analytical thinking. Plus, you don't have to play the levels in a linear fashion. One minute you can try a Wacky World level where "trees" morph from amorphous blobs into familiar, organic structures. Next, you can tour a Mona World level with ubiquitous frescos of the Mona Lisa. Better yet, use the included level editor to invent your own levels. You can create infinite levels, so Lode Runner 2 has the longevity gamers crave. $29.99 is a very, very small price to pay for unlimited playing potential.

THE MYSTERIOUS SMILING MONA LISA WATCHES as you make your way to pieces of gold that seem arbitrarily placed.

Lode Runner 2 is a blast, but it requires brain work. It proves that a game doesn't need real-time rendering of polygons or single-pass multitexture processing to satisfy discriminating players. We highly recommend Lode Runner 2 to all types of gamers except those with frontal lobotomies. Go, Jake! Go, Jane!—*Jennifer Ho*

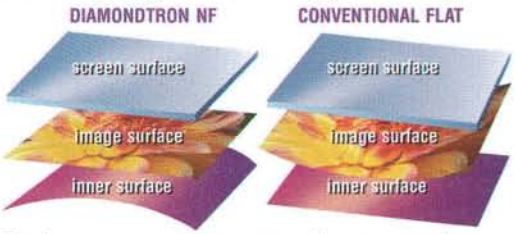
GOOD NEWS: Fun, fun, fun. Cooperative and death-match multiplayer modes. Challenging puzzles. Cool levels. Level editor included. Awesome value for price.
BAD NEWS: Some puzzles are frustrating.

Mitsubishi Is Changing The Face Of Desktop Monitors.



The Finesse Of Flat: Introducing Mitsubishi's Diamond Pro® 900u With The Breakthrough DIAMONDTRON NF™ CRT.

Mitsubishi's new DIAMONDTRON NF (Natural Flat) CRT technology represents an unprecedented improvement in the way you'll look at monitors from this moment on. The revolutionary, truly flat-faced CRT creates distortion-free, intuitively correct images that are much easier on your eyes. Conventional CRTs produce curves and distortions that are hard on your eyes, increasing fatigue and reducing productivity.



You've come to expect crisp, clear images from Mitsubishi's award-winning DIAMONDTRON monitors, and now the innovative Diamond Pro 900u takes monitor performance to an even higher level. The Diamond Pro 900u delivers consistently accurate image quality – side to side, center to corner. In addition, Mitsubishi's patented CRT manufacturing process makes the Diamond Pro 900u stay brighter up to twice as long as conventional CRT designs. First in a family of DIAMONDTRON NF monitors, the 19-inch (18.0-inch DVI*) Diamond Pro 900u has a maximum resolution of 1600 x 1200/75 Hz. For added flexibility it also features a self-powered USB hub that allows two independent computers to share the display and a single set of USB devices. DIAMONDTRON NF monitors are just flat-out better. For more information contact Mitsubishi Electronics today.

USA: 800-843-2515 • Canada: 800-387-9630
*QWIK***FAX**: 800-937-2094
www.mitsubishi-display.com/pb/mad/900u

Designed for Microsoft Windows 95 Mac OS USB

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MITSUBISHI
DISPLAY PRODUCTS
*Innovation On Display*sm

Ricoh RDC-4300

HARDWARE

COMPANY: Ricoh
CONTACT: 800-225-1899 or 702-352-1600, http://www.ricohcpg.com
PRICE: $599 (SRP)
REQUIREMENTS: Mac with serial port, System 7.5 or later, CD-ROM drive

THE RICOH IS silver and svelte.

Photo by KB

With so many small digital cameras on the market, it's getting hard to choose. If you're looking for good image quality in an attractive and easy-to-use camera, and you don't want to empty your wallet to get it, you'll like Ricoh's RDC-4300.

The sleek, silvery RDC-4300 is about the size of a standard pocket camera. The 3X zoom lens sits in a rotating module on the left side that can tilt in any direction from vertical to just below horizontal (including backward for arms-length self-portraits). This allows you to take pictures at any tilt angle while keeping the body more or less level with your face. Unfortunately, there's no position lock, so you must be careful not to nudge the lens away from the desired angle.

There's a 3X optical zoom, a rarity in digital cameras in this price range, but it's slow and a bit noisy. Autofocus, especially at the telephoto setting, is a little soft; we recommend switching to the manual focus mode as often as possible. Macro mode yields sharp close-ups down to about 3 inches. Also rare among low-cost digital cameras, the RDC-4300 gives you exposure compensation for low-light and backlight conditions. While you can't set a shutter speed, the camera itself slows down the shutter in low light. The built-in flash has two modes, forced flash (flash always on) and autoflash, and it adjusts for telephoto or wide. White balance settings cover daylight, fluorescent light, and incandescent light. These and other options are available from streamlined, easy-to-navigate menus. In fact, the camera as a whole has a happy minimum of controls.

Like several smaller digital cameras on the market, the RDC-4300 has no optical viewfinder. You must compose your shots in the camera's 2-inch LCD screen, keeping the camera far enough from your eyes so you can focus on the screen. Experienced film photographers will find that disconcerting at first, but it's not a liability. More troubling is the fact that the LCD is relatively grainy compared to the captured image, and doesn't exactly match it in terms of contrast and color. Moreover, the LCD is hard to see in dim light, and it's on all the time, draining the batteries.

OUTDOOR IMAGES TAKEN WITH RICOH'S RDC-4300 have good detail and rich color. Note the slight softness of the autofocus.

A CLOSE-UP taken in macro mode.

Luckily, the RDC-4300 comes with an AC adapter and a charger with four AA NiMH rechargeable batteries. The camera itself provides an autopower-off timer, a crucial feature some of its competitors lack.

What about image quality? We found outdoor images to be color accurate, if a bit underexposed and too high contrast. Daylight images shot indoors without a flash showed a red cast. Generally, the camera had some trouble finding a truly accurate white point in all the lighting conditions we tested, but this is a failing of all consumer digital cameras. Images downloaded easily to our Mac via the included cable and software, and you can also view pictures directly on a TV via the camera's video-out jack.

The RDC-4300 also records sound. You can attach audio annotations of up to 8 seconds to each picture, or you can record audio alone. Text mode takes high-contrast pictures of text and documents. The RDC-4300 is a smart little digital camera that delivers high-resolution images for a remarkably low price. It's one of the best digital camera buys around.—*Steve Anzovin*

GOOD NEWS: Megapixels for mini bucks. Sleek and small. Complete feature and accessory package.
BAD NEWS: No optical viewfinder. Slow zoom. Red cast in pictures under some lighting conditions.

The All-

External CD-R
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bis. and so
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tem softw

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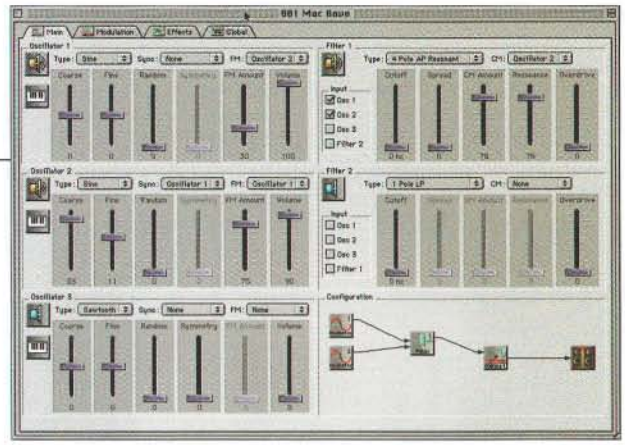
INFOWAVE

Retro AS-1 1.1.2

AUDIO

COMPANY: BitHeadz
CONTACT: 888-870-0070, http://www.bitheadz.com
PRICE: $259 (SRP)
REQUIREMENTS: Power Mac 120MHz or faster, System 7.6.1 or later, 32MB of RAM, 40MB of free hard disk space, CD-ROM drive, 800 by 600 display or better, stereo speakers recommended

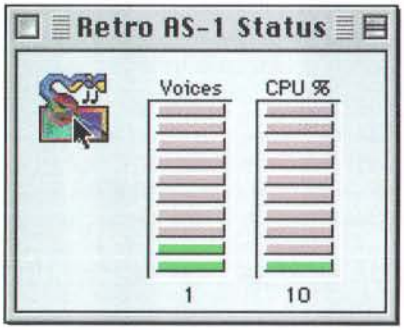


CREATE, MODIFY, AND SAVE PATCHES in the Main page of the editor.

FIND A DEMO of Retro AS-1 1.1.1 on The Disc.

Musician and songwriter Paul Simon once said, "These are days of miracles and wonders...." He was right, especially in this digital age. But analog isn't dead yet. Remember the warm, fat, sweeping analog sound that revolutionized music in the seventies? You can re-create that sound on your Mac and relive yesteryear today, thanks to Retro AS-1 1.1.2 from BitHeadz. Retro AS-1 is a high-quality, fantastic-sounding, full-featured analog synthesizer. It's available to musically inspired Power Mac owners. All you need is a Power Mac that runs at 120MHz or faster.

Retro AS-1 is, in fact, even better than the first analog synthesizers. First, you can play up to 32 notes at once (actual mileage may vary depending on CPU speed and voice complexity). The original synthesizers could only produce one or two simultaneous voices.



THE THOUGHTFULLY INCLUDED STATUS WINDOW lets you see how many voices and how much processor power you're using.

Furthermore, unlike the original synthesizers, Retro AS-1 always stays in tune, unless you don't want it to. A special feature emulates the way those old synthesizers drifted out of tune, and you can determine just how far off it can go. You can control its sound-editing parameters via MIDI so your performances become exciting, mutating creations. Best of all, instead of the $2,000 to $3,000 you'd expect to pay for a vintage synthesizer, you can score this stunner for less than $250 (check street prices).

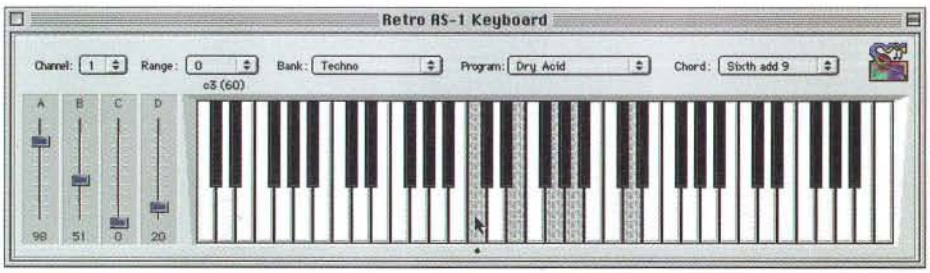
There's something for anyone who's interested in making sounds or music. Retro AS-1 ships with over 1,000 phenomenal sounds (aka patches), and you can play them from your computer keyboard or the Keyboard window—no external MIDI devices are needed. But if you have a MIDI setup, this software performs well as a stand-alone synth or as part of your studio setup, plus it's compatible with just about any sequencer.

If you want to tweak or create sounds, Retro AS-1 is a marvel. The program's powerful features aren't always easy to figure out, but familiarity with synth programming helps. Otherwise, there is an excellent PDF manual, which includes an analog synthesis primer, on the CD. A printed version would have been nicer, though. Retro AS-1 also consists of eight small applications and utilities, which makes it a little unwieldy. Stick with the ones you truly need and save processor power, something you'll value if you're syncing to a software sequencer.

YOU CAN SET RELATIVE VOLUMES, panning information, and effects (such as delay, reverb, chorus, flange, distortion, and reflection) for multitracks in the Mixer.

The Main editing page features an effective interface with which to build the foundations of your patches. The Configuration display at the bottom of the page shows what you've done. You can hear every change you make by pressing the space bar on your keyboard. You can easily access the tabbed Modulation, Effects, and Global pages to add modulations and effects to your patch.

Retro AS-1 gives you enormous control over sound creation, processing, and mixing. Moreover, you can record your multitrack stereo performance (using a sequencer or the Retro AS-1 arpeggiator) as an AIFF file up to 44.1KHz for use in any digital audio application. In addition to your Mac's already miraculous capabilities, wondrous Retro AS-1 can make it a top-notch synthesizer for an exceptional price.—*Judy Munsen*

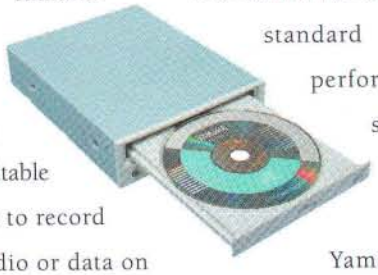


AUDITION SOUNDS IN THE KEYBOARD APPLICATION or via your computer keyboard.

GOOD NEWS: A dream analog synthesizer. Terrific value for price. Excellent electronic manual.
BAD NEWS: Somewhat difficult to set up and learn. No hard copy manual.

Storage for the Masses

Compact Disc is the standard media of the business desktop with over 300 million CD-ROM drives in homes and offices worldwide. Now, Yamaha makes CD's mass appeal even more appealing to business — by making CDs ReWritable. Yamaha CD ReWritable drives give you the capacity to record up to 650Mb of video, audio or data on a single CD-RW disc — and the flexibility to erase and rewrite any part of the disc for revisions and backups. The same CD-RW drive also records CD-R write-once discs that every CD-ROM drive can read. It speed-reads all standard CD formats. And it performs like a Yamaha—the standard of quality in CD recording accuracy and reliability. Let Yamaha CD-RW drives be your business standard. Visit our Web site for a dealer near you.



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Aurora Fuse

HARDWARE

COMPANY: Aurora Design
CONTACT: 800-923-3348 or 810-598-8030, http://www.auroradsgn.com
PRICE: $699 (SRP)
REQUIREMENTS: PCI-based Power Mac, 603e or faster, System 7.6 or later, QuickTime 2.5 or later, 32MB of RAM (64MB recommended), one free PCI slot, Fast/Wide hard drive highly recommended

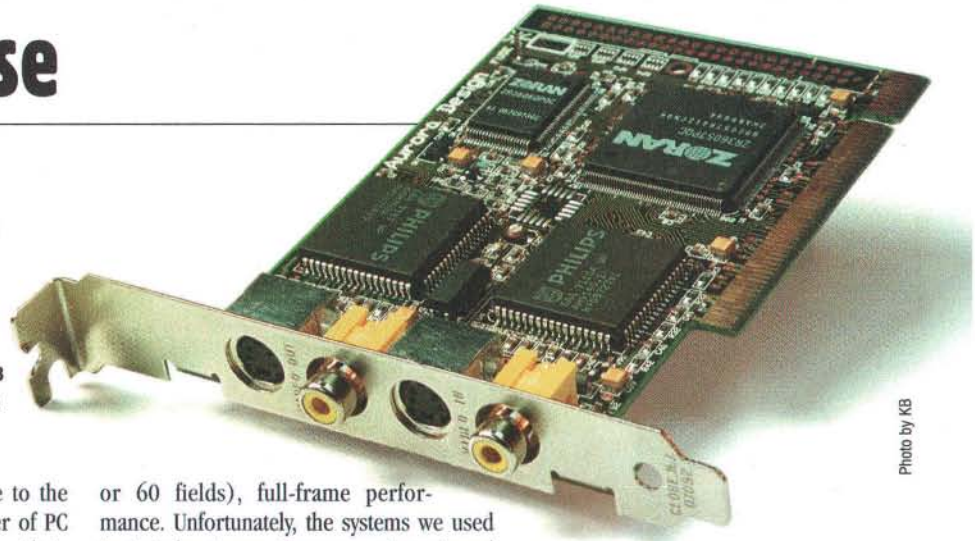


Photo by KB

THE AURORA FUSE IS A SMALL BOARD that packs an impressive punch, capturing high-quality video at up to 9 MBps for a very reasonable price.

The Macintosh platform's move to the PCI bus has inspired a number of PC hardware developers to bring their PCI-based capture cards to the Mac, resulting in several cross-platform but often mediocre video digitizing solutions. Aurora Design has bucked the cross-platform trend with the Aurora Fuse, a Mac-only video capture card that offers an excellent value for many users.

The Aurora Fuse's specs are impressive on paper. Aurora Design claims that in a Power Mac G3 with 64MB of RAM and a Fast/Wide hard drive such as a Seagate Cheetah, the Aurora Fuse will deliver 9-MBps capture rates for 300 KB per frame in NTSC or 360 KB per frame for PAL/SECAM. With this kind of throughput, the Aurora Fuse easily delivers full-motion (30 frames, or 60 fields), full-frame performance. Unfortunately, the systems we used to test the Aurora Fuse weren't equipped with Cheetah drives, so we couldn't verify the 9-MBps capture rate. However, with a variety of fast AV drives, capture rates consistently hit above 8 MBps.

One drawback to the Aurora Fuse is that it doesn't include onboard audio capture. Instead, you must route the audio input and output through the 16-bit stereo miniplugs built into your Mac. The Aurora Fuse maintains excellent sound sync this way, but many Mac models have a low-frequency hum that tends to creep into audio captured from the stereo miniplugs. Omitting audio capture keeps the cost of the Aurora Fuse below $1,000, but for serious video production, you may need to consider an additional audio capture card.

The Aurora Fuse supports a wide variety of resolutions and compression rates using the MJPEG-A compression format. In NTSC, frame sizes can range from 640 by 480 (full screen) down to 160 by 120. NTSC compression ratios go as high as 2:1 for the highest quality and as low as 50:1 for the lowest quality. The Aurora Fuse also supports a similar range of PAL/SECAM resolutions and compression rates.

The Aurora Fuse possesses both composite and S-video inputs and outputs for a good variety of capture and playback options. You can digitize from within any QuickTime-compatible application. If you connect an NTSC monitor to the Aurora Fuse's video-out connectors, you can choose to preview the captured material either on your Mac monitor or through the TV out. This feature alone elevates the Aurora Fuse to a more professional category of capture cards. Full-screen NTSC previews allow editors who will be outputting projects to tape to gauge important aspects of their production, such as color fidelity and TV save titles display. On the other hand, those who plan to have their projects play back from CD or Web pages can use their Mac monitor for full-screen or windowed previewing.

In addition to the card's drivers, the software CD provides a number of utilities, including capture presets for both Adobe Premiere 4.2 and 5.0. The package also comes with two test movies, one for NTSC and one for PAL/SECAM, which you can use to set color balance on a vector scope or waveform. The movies include everything from 100 percent NTSC color bars to a chromanance wedge, all of which are useful for outputting projects to tape. There's also a diagnostic tool called the Rocker you can use to verify the Aurora Fuse's functionality.

The Aurora Fuse is a joy to use. It's easy to install, captures high-quality images, and delivers video-capture performance usually associated with higher-end cards such as the VideoVision Studio or the Media 100qx. And it's only half the price. Budget-minded video makers will do well with the Aurora Fuse.—*Rick Sanchez*

GOOD NEWS: Moderately priced. Excellent video quality. Easy to install. Comes with Adobe Premiere 4.2 Light Edition. **BAD NEWS:** No onboard audio capture. No upgrade options.

VIDEO CAPTURE JARGON

Capture rate: Usually expressed in MBps. Higher is better. Higher capture rates mean the card digitizes more information for higher-quality images.

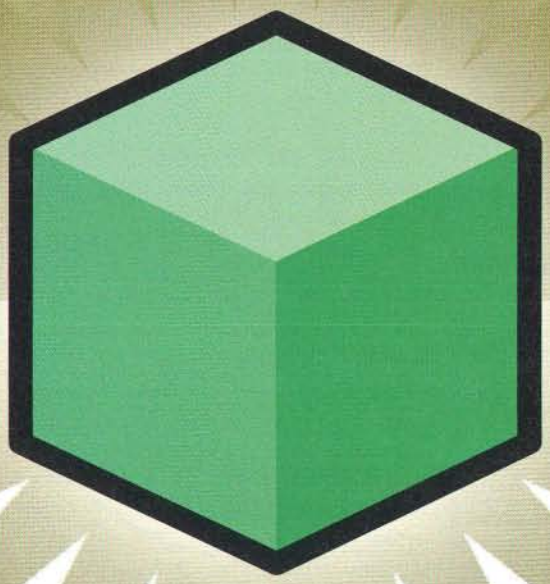
Full frame: Capture cards can capture video that fills a TV screen or monitor, or occupies a small area of the screen. For most cards, full frame is expressed as a resolution of 640 by 480 pixels for NTSC video (the format used in North America).

Full motion: NTSC video plays back at 30 fps. Each frame is a discrete picture comprised of two fields, each containing half the image. A card that captures full-motion video would digitize 30 frames and 60 fields per second.

Compression ratio: This is how much information is discarded from each frame. Lower ratios are better. A compression ratio of 2:1 is close to the original quality. 50:1 would look very degraded.

Broadcast Quality: Broadcast-quality video complies with FCC color and signal intensity requirements. With the right tools, such as a vectorscope and a waveform monitor, you can output video that falls within these guidelines.

NOW YOU CAN CODE



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REALbasic™

MacWorld booth 1647

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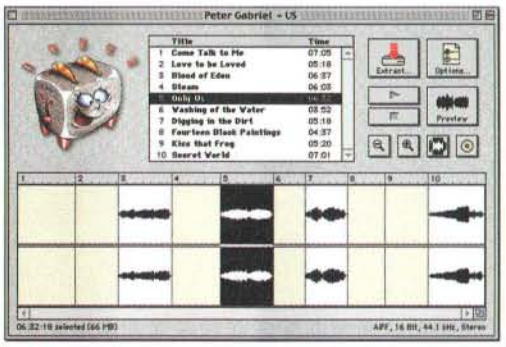
Adaptec Jam 2.5

AUDIO

COMPANY: Adaptec
CONTACT: 800-959-7274, http://www.adaptec.com
PRICE: $299 (SRP), free downloadable upgrade from version 2.1
REQUIREMENTS: 68040 or better, System 7.1 or later, 8MB of available application RAM (24MB recommended), CD-R or CD-RW drive for making CDs, CD-ROM drive for installation

If you currently use software such as Adaptec's Toast to make audio CDs, you should consider changing your tune to Jam 2.5, Adaptec's specialized audio CD creation software. Jam's flexibility, powerful features, and attractive price outmaneuver the limited parameters for making audio CDs found in Toast and similar programs. So strike up the band—it's time to Jam!



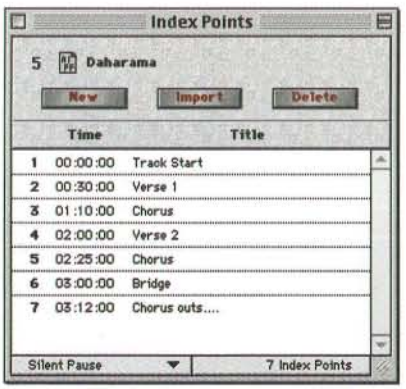
USE TOAST AUDIO EXTRACTOR to extract sound files from existing CDs for your sampling and editing pleasure.

If your CD-R or CD-RW drive, commonly known as a burner, supports disc-at-once mode (in which the laser writes the entire CD in one pass), Jam 2.5 lets you create 100 percent Red Book–compliant audio CDs that you can use as CD masters or play in any standard CD player. Toast, on the other hand, doesn't support disc-at-once mode. If you plan to order copies of your CD, all duplication services require a CD written in disc-at-once mode.

Jam 2.5 sports version 2.1's very powerful features, including nondestructive cross-fades (that is, you can adjust levels as one song fades out and the next fades in without altering the actual file), different predelays per song, and support for multiple Mac and PC file formats. New to version 2.5 is a digital LED meter with clipping indicators, the ability to start a song from any selected time location, and a clever Normalize feature that can analyze one or many tracks and set the playback volumes at their hottest setting without causing distortion. If you own version 2.1, download the free upgrade from Adaptec's Web site—what a sweet deal!

Installing Jam is a breeze. The installer places a folder that contains Jam 2.5, Jam documentation (in PDF format), and Toast Audio Extractor 1.1 on your hard drive. It installs neither extensions nor control panels, as Jam doesn't require any, which is a relief for the extension-conflict conscious. The package also comes with Peak 1.60 LE, an audio editor. Use Peak 1.60 LE to record audio files, as well as trim, normalize, and even apply Premiere plug-in effects to all or part of an audio file. Jam 2.5 lets you open the files used in a CD setup in your favorite audio editor. Just change the file and Jam reflects the modified version. Use the included Toast Audio Extractor to save songs from different audio CDs to any hard disk, then build your own custom CDs.

Jam's intuitive interface renders the manual almost unnecessary. But make sure you read the documentation—it's well written and very helpful. For example, you'll find detailed explanations of Jam's capabilities, including CD basics, cross-fades, PQ-Subcodes, and more.



YOU CAN SPECIFY PARAMETERS in Jam 2.5 to master your CDs the way you want them to be heard. Toast doesn't offer that kind of flexibility.

JAM FEATURES AN EASY-TO-USE INTERFACE that makes burning pro-quality audio CDs a simple, intuitive experience.

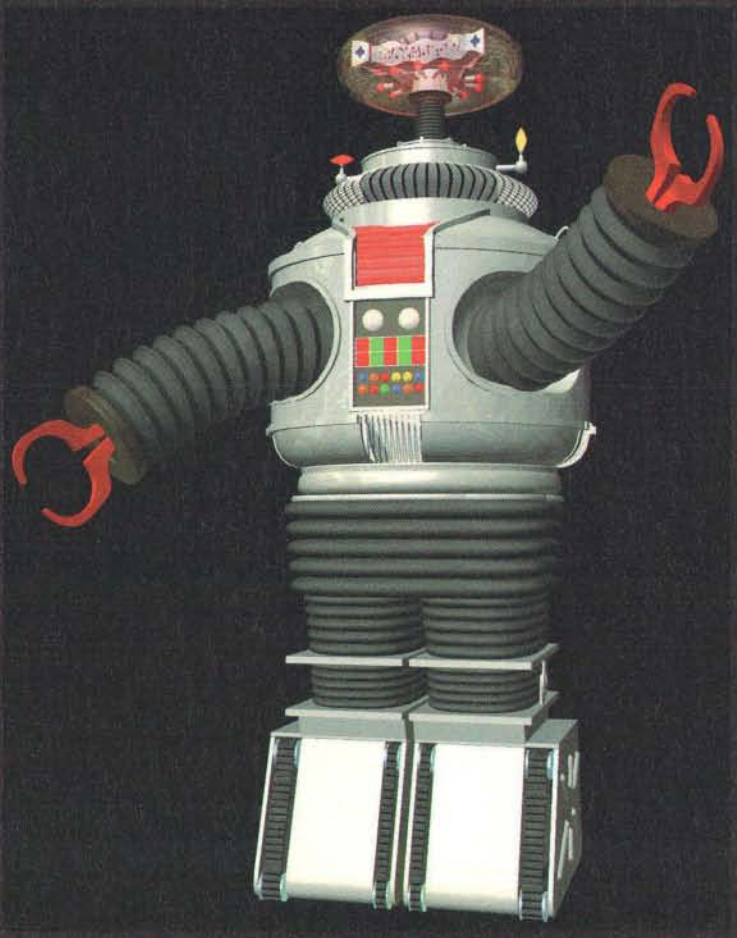
Making a CD is as simple as dragging a number of audio files from any hard drive to Jam's window and clicking the Write Disc button. With Jam's awesome tools you can also customize the CD with separate levels, start and stop points, and even nondestructive cross-fades between tracks.

While the program is well designed and easy to use, there are a few rough spots. Making cross-fades requires a lot of trial and error. You set cross-fade parameters in one pop-up window, then close that window to audition how your changes sound. An audition button in the cross-fade window would make this process easier. Also, while Jam has seven useful prefab cross-fade types, many audio editing and recording programs offer more control, with definable cross-fade curves. There's a quick review option that plays the last 4 seconds and first 4 seconds of each song, but that isn't the same thing as hearing the whole thing.

For anybody making audio CDs, Jam 2.5 is a must-have package, with all the tools necessary to make commercial-quality CDs. Jam 2.5's inclusion of Peak 1.6 LE and Toast Audio Extractor places it above its competition—and at a lower price. We highly recommend Jam 2.5.—*John Lehmkuhl*

GOOD NEWS: Powerful tools for making professional-quality audio CDs. Easy-to-use interface. Includes additional tools for editing and extracting audio from existing CDs. Reasonable price.
BAD NEWS: Clumsy cross-fade interface. Cross-fade shapes are not editable.

DANGER! DANGER!



Don't let your important data become Lost in Space™

When your Macintosh computer is not functioning properly, it is important that you have the right tool to find and correct the problem. And as any knowledgeable robot will tell you, one can never have too many tools when important data is at stake. TechTool Pro 2 checks and repairs more aspects of your Macintosh than any other utility available. Besides repairing and recovering damaged drives (including those with the new HFS+ format), you can also test all those other critical parts of your system that other utilities ignore like RAM, CPU, floppy drives, scanners, modems, Internet connections, CD-ROM drives and much, much more. TechTool Pro will even help your computer run faster by optimizing your disk drives.

But just because TechTool Pro is the most advanced Macintosh troubleshooting utility available doesn't mean that it's difficult to use. In fact, we've added an easy-to-use interface that makes checking and fixing your Macintosh a snap. For the advanced user, our expert mode allows you to control and configure TechTool Pro in almost any way you wish.

So if Macintosh troubles are making you feel like a bubble-headed booby, check out TechTool Pro. After all, you have the most powerful computer in the galaxy. Shouldn't you be using the most powerful utility?

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Vpower G3/233 512K

HARDWARE

COMPANY: Vimage
CONTACT: 877-484-6243, http://www.vimagestore.com
PRICE: $389 (SRP)
REQUIREMENTS: Power Mac 7300, 7500, 7600, 8500, 8600, 9500, or 9600; Umax Pulsar 1500, 1660, 2000, 2000VR, 2000DP, 2250, 2330, 2330VR, 2500, or 2500DP; System 7.5.2, 7.6, 8.0 or later
SPECIFICATIONS: 233MHz G3 with a 512K backside cache running at 116MHz

Photo by KB

THE VPOWER IS VERY POWERFUL but easy on the pocketbook. You even get a free heat sink!

Can an upgrade technology continue to get less expensive and faster? OK, that was a rhetorical question, since the birth of the G3 unleashed a nonstop drive for speed and opened the floodgates for G3 upgrade cards. Among the newcomers to the CPU upgrade business is Vimage, whose entry-level Vpower G3/233 512K card is one of many on the market today. The Vpower G3/233 moves considerably faster than the identically clocked 233MHz 604e upgrade that has driven the Power Mac 7600 we tested for the last six months. And if you compare the speed jump to the 7600's original 132MHz CPU, the increase is even more astounding. The G3 revolution roars on, indeed.

Installation consists of two easy steps. First, run the installer on the enclosed floppy disk. The installer puts two items on your hard drive: the Vpower G3 EX extension, which optimizes the card to your particular system's configuration; and VpowerInfo, a small application that launches at startup and tells you the speed at which the new CPU is running. If the Vpower G3 EX extension doesn't load at startup, VpowerInfo tells you so. Next, install the card itself. Make sure you're grounded, then place the Vpower G3/233 in as you would a DIMM or cache module.

At first, we didn't expect to see a big jump in speed, since the Vpower G3/233 has the same clock rating as the 604e upgrade. Right away, however, the much faster startup and snappier overall operations blew us away. Folders fly open when double-clicked and execution speeds are noticeably faster in every application. The time shaved off both Bryce 3D and Photoshop render plug-ins is amazing. In Emagic's Logic Audio 3.5, we found that we could use 12 real-time VST Plug-ins, versus 6 without the G3 upgrade. We're talking serious power!

The big question for most consumers should be whether the 233MHz G3 is fast enough for their needs. If you are a power user with a 200MHz 604e or faster, you might want a 300MHz upgrade card or faster. Vimage also makes the Vpower G3/300 (see *Reviews*, Dec/98, p84). But the price-to-performance ratio of the Vpower G3/233 should be enough for most consumers. To get the most current information on Vimage products, including upgrade prices, check out the company's comprehensive Web site.

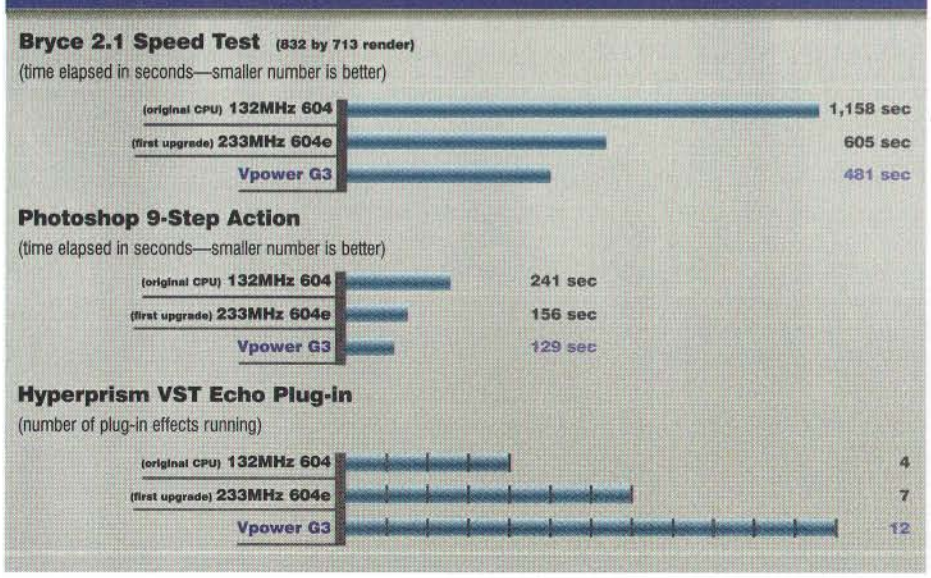
What more can we say? The Vpower G3/233 is an inexpensive upgrade card that's a cinch to install, has no drawbacks, and speeds up everything you currently do with your computer. Snap one in, fasten your seatbelt, and start the new year with a refreshing burst of speed.—*John Lehmkuhl*

Norton System Info 3.5.1 System Ratings

(the higher the number, the better the performance)

	(original CPU) 132MHz 604	(first upgrade) 233MHz 604e	Vpower G3
Overall	258	427	561
CPU	283	508	618
Video	192	393	570
Disc	181	190	223
FPU	316	584	541

Real World Performance



GOOD NEWS: Easy installation. Awesome speed boost. Great value for the money. **BAD NEWS:** As usual, original system components such as bus speed remain the same.

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Mac on Line

Strata StudioPro 2.5.3

DESIGN & GRAPHICS

COMPANY: Strata
CONTACT: 800-678-7282, http://www.strata.com
PRICE: $995 (SRP)
REQUIREMENTS: Power Mac, System 7.6.1 or later, 40MB of RAM, 35MB of free hard disk space, QuickTime 2.5 or later, QuickDraw 3D 1.5.3
RECOMMENDED: System 8.1 or later, 96MB of RAM, 100MB of free hard disk space, QuickTime 3.0

WORK WITH MODELS DIRECTLY in StudioPro's main workspace.

FIND A DEMO of Strata StudioPro 2.5.2 on The Disc.

For some time, Strata StudioPro, a capable modeling, animation, and rendering package, held a near-monopoly on the creation of rich, photorealistic images on the Mac, with rendering features such as radiosity and surface-normal smoothing that most 3D companies hadn't even heard of.

But the program also has a history of design gaffes. Starting with version 1.5, it became increasingly unstable. Rushing to endow Strata StudioPro with the newest 3D features, Strata often settled for clumsy implementations that robbed the new tools of much of their usefulness. Bones weren't really bones, texture maps didn't stick, Booleans were unreliable, morphing and deformations were clumsy and hardly animatable, and even the much-lauded renderer started to produce strange artifacts. Strata StudioPro began to lose the 3D animation battle to up-and-comers Infini-D, LightWave, and Bryce.

But Strata hasn't been sitting on its hands. The newest release of Strata StudioPro, version 2.5.3, fixes many long-standing problems and adds some features that are useful and well implemented. There are still some problems, but this newest upgrade is the best yet.

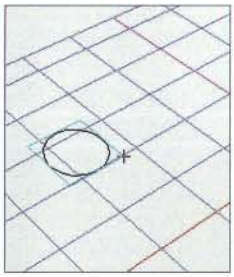
For general modeling operations, StudioPro 2.5.3 is quite easy to use. All the usual tools are here—extrudes, lathes, sweeps, and skinning—but they can be manipulated in a very intuitive way right in the general workspace. Strata calls this "in-context modeling," and it's an improvement over programs that box you into a special modeling window. You can make many objects from Bézier curves by just pulling a few handles. Everything is adjustable after the fact, so the modeling process is fast and easy.

The most versatile mode for complex modeling is the Bézier surface. You can turn most objects (except polygonal mesh objects) into a Bézier surface, and from there the surface is very malleable. You can also add control points at any patch, allowing the creation of complex shapes that would be quite difficult to create any other way. Boolean functions (add, subtract, and so on) are also available. In a StudioPro first, the Boolean functions in version 2.5.3 are stable and reliable. Even when cutting apart complex shapes, the tools leave no extra polygons hanging off the edges.

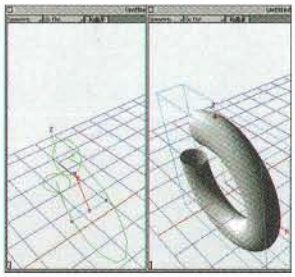
Unfortunately, using Boolean functions on any object immediately turns it into a polygonal mesh object, with all of its spline functionality lost. There is no way to break the surface

Lord of the Springs

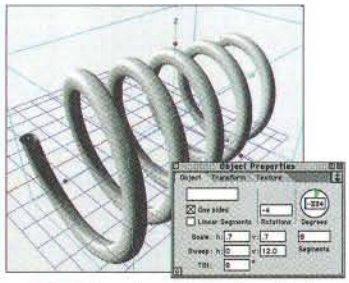
StudioPro's In-Context Modelers make it surprisingly easy to create simple shapes like springs. In this tutorial, we'll make a spring out of nothing but a circle and the Lathe tool.



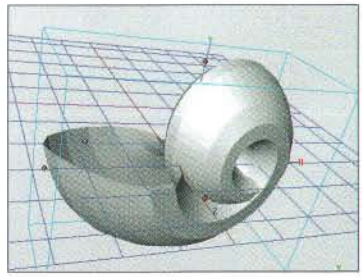
1 Draw a circle using the Oval tool on the floor grid.



2 Use the Lathe tool to turn it into a partial donut.



3 After only a little fooling with the Sweep and Scale values in the Object Properties box, our semidonut has turned into a spring.



4 Use the same technique to create seashells and other swept objects.

of a Bézier object at all without turning it into polygons, nor can you blend surfaces between two Bézier objects; this limits the kinds of topologies you can create.

The program also has a good implementation of metaballs, a feature that takes a group of spheres or spheroids and skins over them to make organic shapes. Metaballs are fast and easy to use, and in part this makes up for the difficulties in creating branching topology using the Bézier surface tools. There's also a nice lattice deformation tool with only one problem: The lattice is set to a crude 3-by-3-by-3 resolution you can't change.

Since version 1.0, StudioPro has had one exceptional animation tool: the use of "shapes," individual packages of animated models that you can drop as an "instance" anywhere in the scene. For building large scenes, this tool is indispensable, because you can add as many instances of a shape as you like without creating lots of extra geometry. StudioPro's other animation tools are unexciting. The timeline is basic, as are the velocity graphs, which feel clumsy and tacked on, unlike the elegant function curves available in other products in the same price range.

By contrast, StudioPro's texture mapping is mostly well thought out, with a large range of different procedural textures available and several ways to combine them on one surface. This version adds UV mapping (in which the map is "stuck," not "projected," onto the surface of an object), but the results of using this method of mapping on a polygonal object can be unpredictable. This is a problem when you're using the bones tools, since bones only affect polygonal objects.

StudioPro's renderer is justly considered top notch. Rendering and antialiasing options are numerous. It's especially good at emulating the little telltale signs of reality that are usually absent from computer-generated images. In addition to depth of field and motion blur, StudioPro can simulate volumetric soft shadows, which become fuzzier the farther they are from the object casting them, and it can generate diffuse reflections among objects with its radiosity renderer. Advanced options add drastically to rendering times, but the results, in the hands of a competent artist, provide that elusive edge of heightened realism.

As an alternative to the raytrace renderer, StudioPro now offers a scanline renderer that is much quicker. The quality difference, however, is very noticeable. Even at the higher antialiasing settings, scanline renderings still look somewhat jagged, especially in texture maps. Scanline rendering is a useful alternative when speed is paramount, but StudioPro's raytracer is still the star.

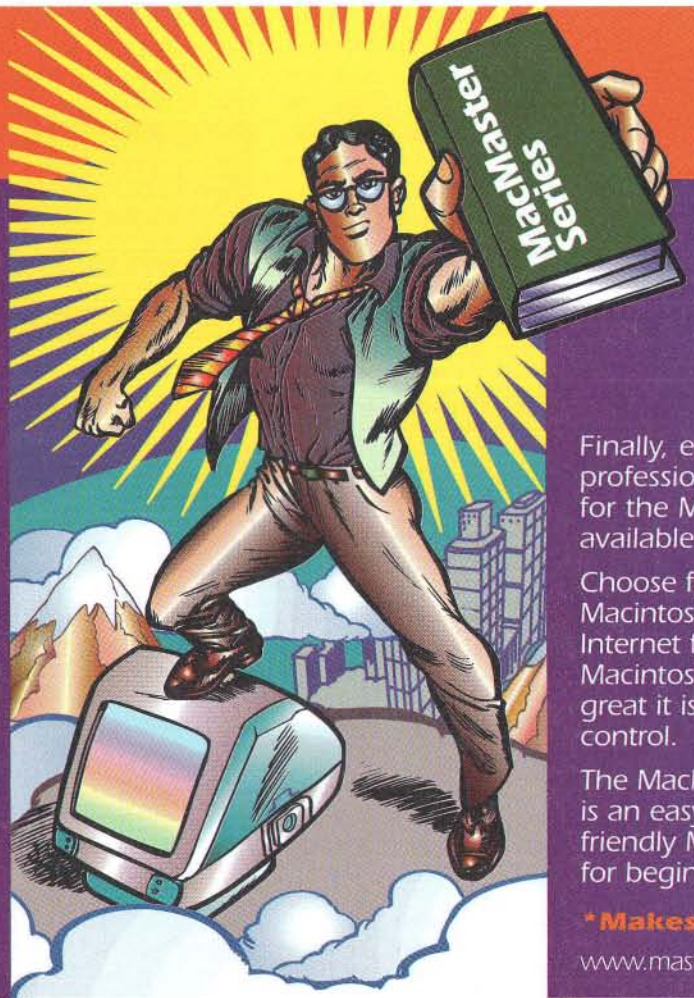
STRATA STUDIOPRO'S RAYTRACER is justly praised for its realism.

On the whole, StudioPro 2.5.3 is a competent package with some serious weaknesses that should be weighed carefully against your needs. Products such as Inspire 3D and Cinema4D SE pack more bang for the buck. Despite all the newer Mac 3D apps out there, however, many Strata loyalists swear by StudioPro. If its particular blend of interface and features appeals to you, you might decide to join them.—*Raf Anzovin*

GOOD NEWS: Easy, intuitive in-context modeling with superior Boolean operations. High degree of render control. Excellent render quality. Instancing.

BAD NEWS: UV mapping on polygonal objects is difficult. Modeler can't create advanced shapes and topologies. Cumbersome velocity graphs. Underpowered deformation and bones tools.

1 800 727-3055
$29.95 + S&H



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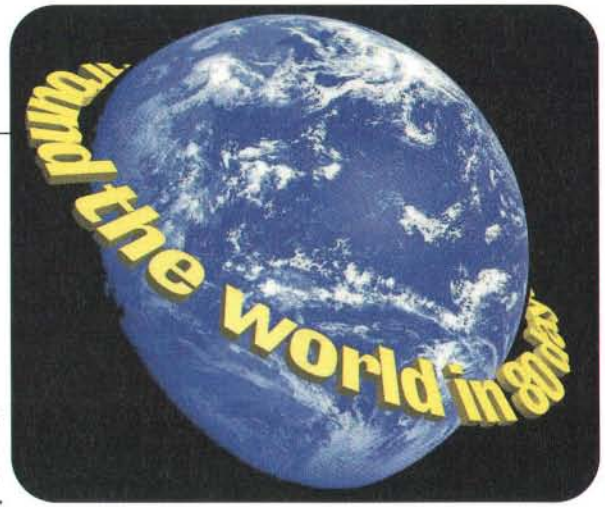
Vertigo HotText 1.5

DESIGN & GRAPHICS

COMPANY: Vertigo Technology
CONTACT: 888-483-8446, 604-684-2113, http://www.vertigo3d.com
PRICE: $79.95 (SRP), $39.95 upgrade
REQUIREMENTS: Photoshop 3.0.5 or later, Adobe PhotoDeluxe 2.0, or Corel Photo-Paint 8; System 7.5.1 or later; 16MB of RAM (32MB recommended); QuickDraw 3D 1.5.3 or later



IT TAKES ONLY MOMENTS to take plain, flat text to all kinds of curvy heights in HotText.

FIND A DEMO of HotText 1.5 on The Disc.

For those new to 3D, Vertigo's HotText 1.5, a 3D text plug-in for popular imaging apps, is a great place to start. Within minutes even a novice can crank out superb-looking 3D text. Simply type in your text; choose your color, bevel, shadow, light source, and camera angle; then render. The faster your Mac is the less time you'll wait for the final render. On an iMac, HotText renders text in only a few seconds; on a 601-based Mac, it takes about one minute.

Adobe Illustrator users will be familiar with HotText's ability to place type along a path in a full spatial field, and you can now kern the type very precisely (a new feature in 1.5) and play with it all you like. You can create paths on the spot, or use the preset ones. As for textures, the CD comes with over 1,500 of them, and you can import any PICT file as a texture as well.

HotText's new beveling features will please Web artists as much as its professional-level antialiasing. The Preview window is very fast on all machines, so you can play around to your heart's desire before rendering. However, as in previous versions, once you've rendered the text, it's set in stone. Even Photoshop 5.0's new type tools can't help you once your text is rendered, so be sure to check your spelling with a dictionary before clicking the OK button.

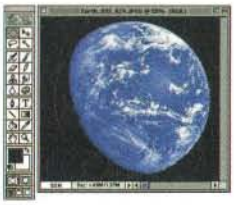
We were disappointed that you can't rotate individual letters, only the text as a whole. Furthermore, HotText still doesn't offer one of our favorite features from the olden days of TypeStyler—the ability to have a shadow fade into the distance. But boy could we while away the hours playing with the light sources and camera angles, which HotText handles the same way that MetaCreations' Bryce 3D does. Rearranging light sources and camera angles; adding and subtracting them; changing color—it's a little bit of Industrial Light & Magic right on your Mac. And HotText's well-illustrated manual does more than clearly explain the plug-in; it imparts useful information that will help further your work with 3D design. Vertigo has thoughtfully included tryout versions of Dizzy and its other vector- and bitmap-program plug-ins to let you explore more fully how 3D might impact your graphics work.

Now priced at $79.95, HotText will thrill many Photoshop, PhotoDeluxe, and Photo-Paint users with its ability to bring sophisticated 3D effects to the masses. For Web and portfolio work, we can think of no other product that creates impressive results so quickly. HotText takes you from 2D to 3D with style and flair.—*Charles Martin*

GOOD NEWS: Creates cool 3D text in seconds. Affordable, yet powerful. Professional-level kerning, beveling, and antialiasing.
BAD NEWS: Type larger than available space is cut off. Can't fade shadows. Can't rotate individual letters.

Wrap around the World

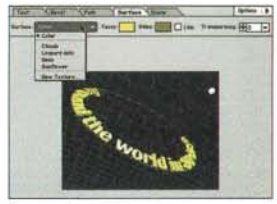
With a few clicks and a bit of finesse, you can add 3D text to a so-so image. Let's tweak our planet with some worldly words.



1 To make 3D text wrap around a NASA photo of Earth, start by making a path around the planet, then saving it. Next, create an empty layer for the text.

2 When you choose HotText from Photoshop's Filter menu, HotText remembers the settings you last used. After setting the depth (in the tear-off menu on the right), bend this line to one of the preset paths.

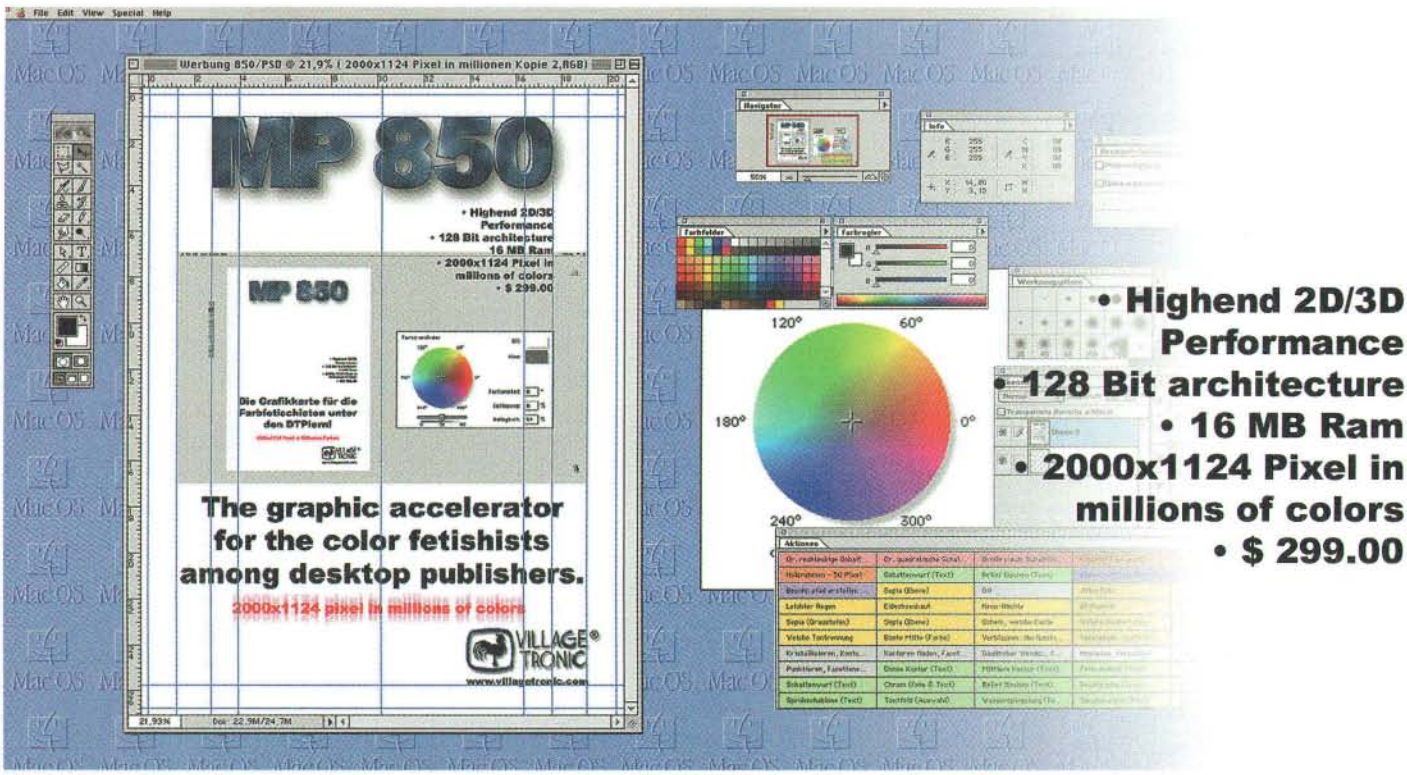
3 Use the Swing tool (a Saturn-like icon) to swing the camera view until you get your text at the angle you want. Notice the placement of the single light source. It matches the offscreen light source of NASA's image.



4 After tweaking the color and transparency, click the OK button. When it's done rendering, HotText throws the text into whatever layer was active when you started.

5 Copy the clipping path of Earth into a third layer and cut away the parts you don't need. Flatten the image and save it.

MP 850



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Conflict Catcher 8

UTILITY

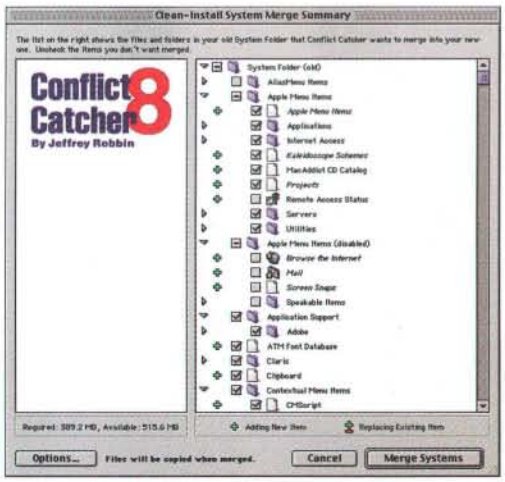
COMPANY: Casady & Greene
CONTACT: 408-484-9228 or 800-359-4920, http://www.casadyg.com
PRICE: $79.95 (SRP)
REQUIREMENTS: 68020 or faster, System 7.5 or later, CD-ROM drive

FIND A DEMO of Conflict Catcher 8 on The Disc.

With the release of Conflict Catcher 8, Casady & Greene's oft-lauded utility easily retains its lofty status as the last word in extensions management. Though not everyone will get enough mileage out of Conflict Catcher's System Folder–manipulation capabilities to justify replacing Apple's free Extensions Manager with this commercial alternative, those of you who'd rather pore over the contents of your Control Panels folder than run through fields with flowers strewn in your hair are sure to appreciate its ever-expanding feature set.

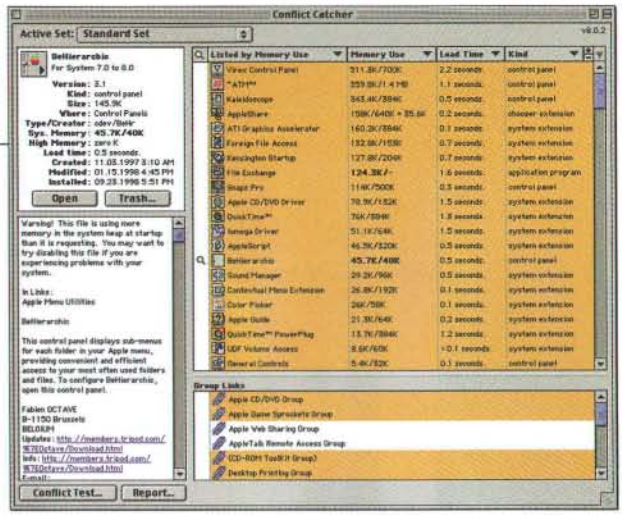
Conflicting Advice

Use the tips: Conflict Catcher features 31 useful tips—that's one a day for a month.
Access with ease: Conflict Catcher puts an icon in the menu bar. Click on it to bring down a menu where you can open Conflict Catcher quickly and easily.
Rebuild your desktop: Take advantage of Conflict Catcher's Rebuild Desktop function for better rebuilds.
Scan for damage: Use Conflict Catcher to scan files and folders for damage.



THE CLEAN-INSTALL SYSTEM MERGE process gives you a chance to preview the changes before the merge takes place.

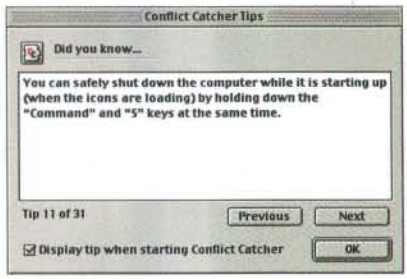
Conflict Catcher takes its name from its ingenious extension conflict resolution features, but most of the time you'll be interacting with it in a noncrisis context. In day-to-day use, it plays a role similar to the Extensions Manager's: enabling and disabling extensions, control panels, fonts, and startup items. As with the Extensions Manager, you can invoke it at startup for last-minute adjustments and use it to save extension combinations as switchable sets. In addition, Conflict Catcher can manage the contents of other folders inside and outside the System Folder (such as printer descriptions, contextual menu items, or application and browser plug-ins), display detailed descriptions of each extension from its comprehensive reference database, and group extensions into sets for mass management.



THE CONTROL PANEL INTERFACE lets you inspect extensions and groups, with fully customizable info columns.

For the most part, the enhancements in version 8 are the stuff of which upgrades are usually made—a few new features, some thoughtful interface refinements, and Mac OS 8.5 compatibility. There's one standout new feature, however—the ability to merge third-party extensions and preference files into a new System Folder created with the Clean Install option. Previously, performing a clean system installation entailed a tedious process of manual file transfer from old to new System Folders. With Conflict Catcher's Clean-Install System Merge command, the process of moving or copying these precious add-ons is almost totally automatic. And since the control panel's improved Startup menu now lets you choose not only among multiple startup disks, but also among multiple System Folders on the same disk, you can easily toggle between the old and new systems.

While the other changes in version 8 are primarily aesthetic, extensions mavens will enjoy the refined control panel interface, with its fully configurable display columns, contextual menus, and streamlined group editing. Support for Apple's Location Manager, optional startup tips, new options for mid-startup extension inspection, and a childproof Restricted Mode round out the change list.



CONFLICT CATCHER PROVIDES STARTUP TIPS if you want 'em. Beats reading the manual!

However, these new features come at a price. While Conflict Catcher 8's roughly $80 price tag is a small hike from the previous version's $60 sticker, the increased price pushes this much-beloved utility from a must-have into optional territory. Owners of previous versions, given only the meager concession of a $30 rebate that expires at the end of 1998, may be particularly vexed at the prospect of shelling out $50 for Mac OS 8.5 compatibility. Still, that's the way the upgrade game is played, and Casady & Greene has at least given you a couple of killer new features for your money.—*Mark Simmons*

GOOD NEWS: Full-featured extensions management. Flexible interface. New features are actually useful. BAD NEWS: Increased feature count comes with increased price tag.

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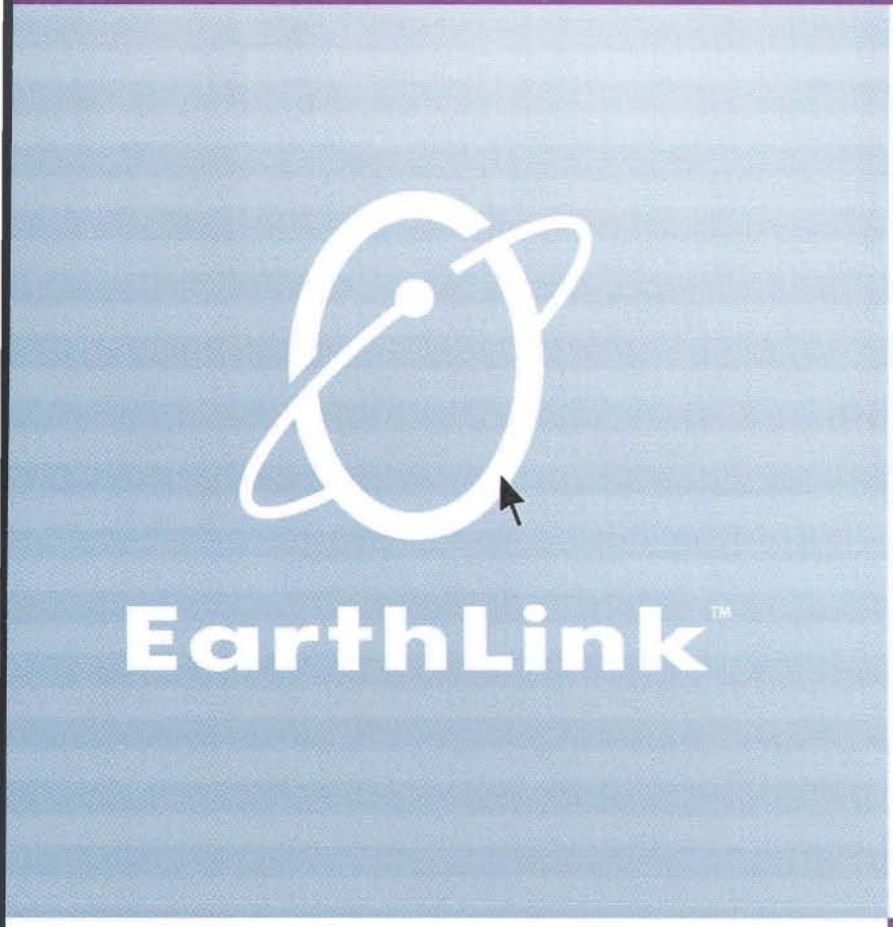

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"EarthLink has become the Macintosh of the ISP world — the way for 'mere mortals' to connect to the Net." Business Week, December 15, 1997

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Mariner Write 2.0

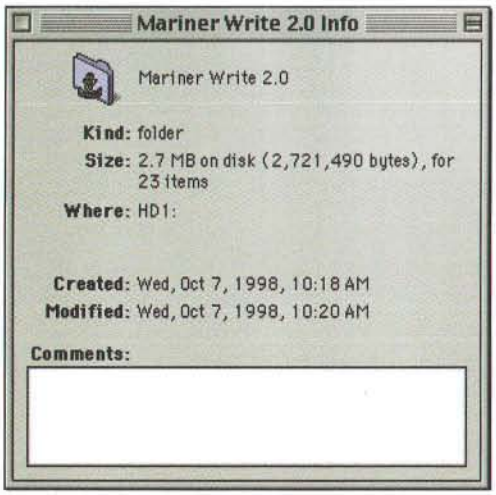
PRODUCTIVITY

COMPANY: Mariner Software
CONTACT: 502-222-6695, http://www.marinersoft.com
PRICE: $69.95 (SRP), $49.95 download
REQUIREMENTS: 68020 or faster, System 7.0 or later, 2MB of RAM

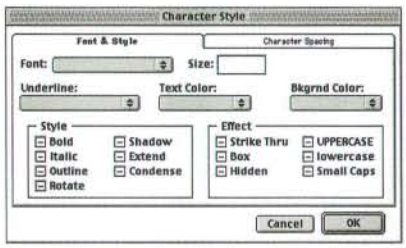
FIND A DEMO of Mariner Write 2.0.5 on The Disc.

Do you find the idea of paying $399 for a word processing program absurd, perhaps even offensive? Do you also find yourself bitterly wondering why an application that you use to write letters and papers requires 16MB of RAM and hogs 60MB of free hard disk space? That anger is what Mariner Software, creator of Mariner Write 2.0—"the writing tool for the rest of us"—seems to be banking on. And with its big improvements from the previous version—including the ability to create tables, a thesaurus, and improved file translation—this little word processor is well worth its tiny $69.95 price.

What does gargantuan Microsoft Word 98 offer that itty-bitty Mariner Write 2.0 doesn't? Oh, the list is long: a grammar checker, for starters; unlimited undos (Mariner Write 2.0 allows up to 10 undos, which should, we hope, be enough for most of you); letter, fax, and resume templates and wizards; mail merge; the ability to save text as HTML; and so on. But the real question you should ask yourself is, do I ever use any of those advanced features, or are they just sucking up much-needed memory and space?



ONLY 2.7MB OF HARD DISK SPACE. Goodness, that's small. Why, the Letters & Faxes templates folder in Microsoft Word 98 takes up 1.3MB all by itself. Hmmm...



USERS OF PAST VERSIONS OF MARINER WRITE complained that they couldn't find and replace formatting. Well, in version 2.0 they can. So there.

Mariner Write 2.0 is on par with Word 98 for most word processing needs. It includes all of the basic formatting features, including text styles from bold to superscript, line spacing, text alignment, bulleted lists, columns, headers and footers, and style sheets for creating your own formatting templates—and it goes beyond the bare necessities with a slew of great extra features. It has a spelling dictionary with 80,000-plus words; supports numerous international scripts, including kanji; imports graphics or objects in EPS, PICT, JPEG, and GIF formats; offers style sheets; supports Macintosh Text to Speech; and provides Macintosh drag and drop so you don't have to spend your days cutting and pasting. Its new and improved Find/Replace command recognizes not just words and case, but formatting—so you can, for example, replace all boldface with italics throughout an entire document. And while everyone can take advantage of the six included AppleScripts, such as Go To Line or Set Min Margins, AppleScripters can even write their own to automate editing and formatting tasks.

Most important, Mariner Write 2.0 offers the one thing it needs to survive in a market that's rapidly becoming a monopoly: the ability to open and save in Microsoft Word and other file formats via DataViz's MacLink Plus translators. That feature is much improved from the previous version.

Here's a picture of our favorite *MacAddict* supermodel sporting the latest spring fashions. See how great she looks with the text wrapping around her and her stylish outfit. Mariner Write lets you do a lot more than import objects, and it only takes up 2.7MB of hard disk space and 2MB of RAM. Pretty amazing, eh? Wow.

OK, IT'S NOT PROFESSIONAL ENOUGH to show anyone but our mothers (oops, we just did), but this one-page document we whipped up in Mariner Write shows off one of its many cool features—object importing.

In our review of Mariner Write 1.3 (Jan/97, p78), we found problems with formatting when we opened Word documents in Mariner Write. In version 2.0, those problems are history: Bold, italic, subscript, line spacing, and even imported images translate back and forth easily between applications. Note: Formatting features that Mariner Write doesn't support, such as small caps, don't translate and occasionally cause document crashes.

What's the very best thing about Mariner Write? All these features take up almost no room on your hard drive. Mariner Write 2.0 occupies only 2.7MB of hard disk space and needs less than 2MB of RAM. Yowza! That's not much space to expend on a whole lot of productivity. For those of you with little hard disk space and memory to spare, Mariner Write 2.0 may be the word processor of your dreams. And for other Mac owners who don't need Word's advanced features, it offers an alternative to the unwieldy behemoth. The writing tool for the rest of us, indeed.—*Jeff Titterton*

GOOD NEWS: Tiny RAM and hard disk requirements. Cheap. Offers tons of features for such a small app, including the newly added thesaurus and tables. Translates easily to Microsoft Word and other file formats. **BAD NEWS:** Lacks advanced features you probably don't need anyway, such as a grammar checker and mail merge.

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The 11th Hour: Sequel to The 7th Guest

FUN & GAMES

COMPANY: Virgin Interactive
CONTACT: http://www.vie.com
PRICE: $29.95 (SRP)
REQUIREMENTS: PowerPC, System 7.5.3 or later, 12MB of RAM, 6MB of free hard disk space, 4X CD-ROM drive

A DINING TABLE, long abandoned, offers dinner disarray and clues. The eyeball tells you where to look.

That creepy old house in upstate New York has been naughty again. The home of depraved toy-maker Henry Stauf, who was last seen playing murderous tricks on a group of overnight visitors in The 7th Guest, has resurfaced with a vengeance in the belated Mac version of The 11th Hour.

The 7th Guest was a smash hit for both PC and Mac in its day, so you would have expected a fair amount of hype when the sequel rolled around. But Virgin Interactive released the Mac version of The 11th Hour with scarcely a whisper. A pity—it deserves better, especially for the puzzle fanatics who ate up the original.

The 11th Hour takes you back to the old haunted house that once belonged to mad genius Henry Stauf. Situated on the outskirts of a weird little town called Harley on the Hudson, where supernatural things seem to happen naturally, the ghostly mansion is filled with the ominous detritus of past crimes and some of the toughest puzzles ever to mangle a brain.

There is, of course, a plot. A TV producer, Robin Morales, entered the house to track down a major story—and disappeared. Now her anchorman, Carl Denning, has come to the house to find her. He must solve more than 40 riddles and work his way through almost 20 tough brain-busters before midnight, or she'll be lost forever.

The puzzles are the driving force in this game. There are numerous familiar devices from The 7th Guest to aid you: a bony hand that beckons you onward or wags at you to deny access, a skull with a throbbing brain to indicate a puzzle, and a rolling eyeball that shows possible moves. As you solve the puzzles, you learn more about the story that Morales was chasing—two young women were trapped in Stauf's mansion years ago and ravished. One is now confined to a wheelchair; the other has a prosthetic hand and an evil daughter. Their night of horror unfolds slowly through snippets of full-motion video.

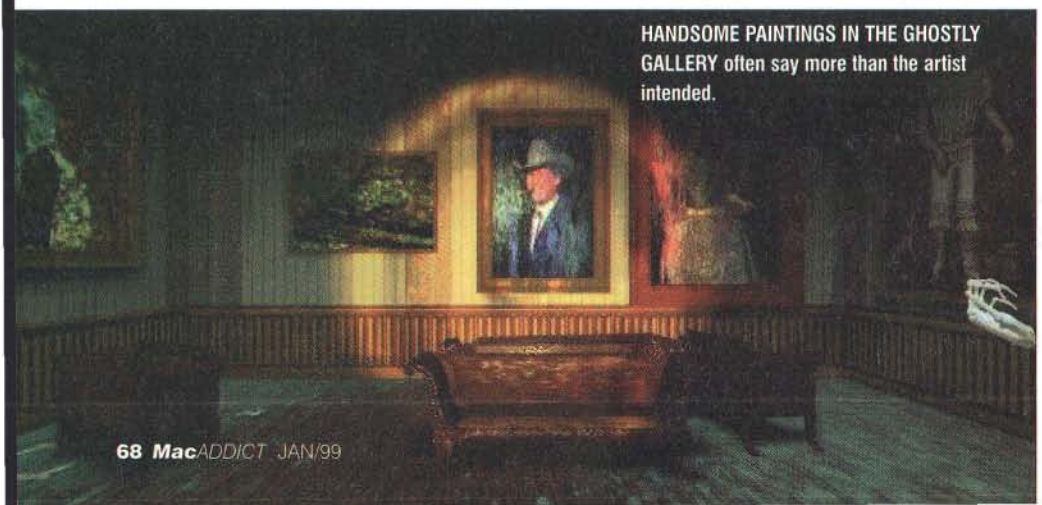
The riddles are tough, too. They appear through a device called the GameBook. They may be short ("Skedaddled") or long and nonsensical ("Dreams abound of arming the rebels. What of nocturnal horses' schedules?"). Some riddles may suggest the room you need ("Artsy, excited lecher" leads to the Art Gallery and a painting of a satyr), or you may have to wander through rooms, clicking on everything.

You don't have to have played The 7th Guest to understand the sequel, but it helps. When a clue suggests a trip to the dining room or the bathroom, memory cells may guide you in the proper direction. If you missed The 7th Guest, don't worry. Most rooms are inaccessible until you need them. You can always retrace your steps to see if the bony hand beckons toward a previously blocked room.

In case you're at a loss, you can turn to the useful brain-saving device, the Techno-Psychic Ally. If one of Stauf's wicked logic puzzles proves too difficult, go to your GameBook and ask for help. A ghostly female voice will offer advice. The first time, she'll give you a general clue; the second time, a more specific clue. If you ask a third time, she'll offer to solve the puzzle.

But don't rely on her too much. Even specters get tired, so she may not be around when you need her.—*John Lee*

TO SEE SOME OF THE GORY VIDEOS, you must first solve various riddles and puzzles.



HANDSOME PAINTINGS IN THE GHOSTLY GALLERY often say more than the artist intended.

GOOD NEWS: Spooky visuals. Eerie music. Brain-busting puzzles. Faithful reprise for The 7th Guest fans.
BAD NEWS: Retracing your steps in the house can get monotonous.

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Virtual PC 2.1 with Windows 98

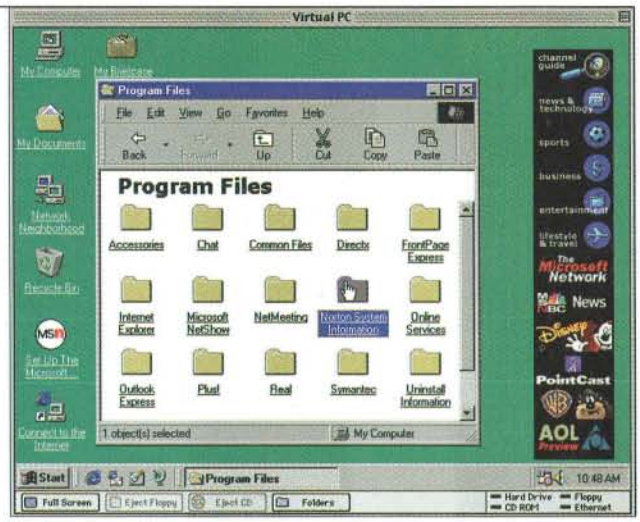
PRODUCTIVITY

COMPANY: Connectix
CONTACT: 800-950-5880, http://www.connectix.com
PRICE: $179.95 (SRP)
REQUIREMENTS: Any G3, System 8.0 or later, 48MB of RAM, 280MB of free hard disk space, 2X CD-ROM drive, L2 cache recommended

Mac users who need to work with PC-only applications or test cross-platform applications have a new tool at their disposal—Connectix's recent update to its PC emulation software, Virtual PC 2.1 with the Microsoft Windows 98 operating system.

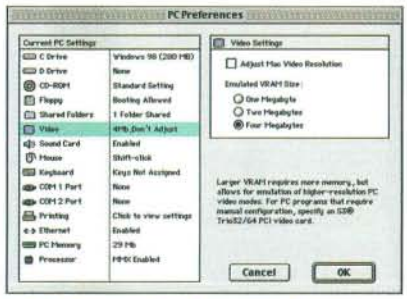
From an emulation standpoint, Virtual PC 2.1 is only a minor improvement over version 2.0. The biggest difference between version 2.0 and 2.1 is support for Microsoft's latest operating system, Windows 98. Other improvements include an optimized DirectX 5.0 video driver, S3 Trio 32/64 video card emulation with support for up to 4MB of emulated VRAM, 56-kbps modem support, and 3Dfx Voodoo2 support. Virtual PC 2.1 is also slightly faster and more stable than the already rock solid version 2.0.

We conducted speed tests on a 233MHz Power Mac G3 using Virtual PC 2.1 and 2.0 with Windows 95. Microsoft Word page scrolls, Adobe Photoshop Gaussian blurs, and Macromedia Director projector builds were all a second or two faster. Glide-accelerated Quake II frame rates improved by only 0.3 seconds, from 7.3 to 7.6 fps. Unfortunately, Version 2.1 still has most of the audio glitches that plagued PC gameplay in version 2.0. Ironically, with the version of Windows 98 that comes with the Virtual PC 2.1 package, emulation performance actually dropped a few seconds, though this has less to do with Virtual PC than with issues inherent to Windows 98. The most obvious speed difference between using Windows 95 and 98 with Virtual PC 2.1 is in startup: Windows 98 took 1 minute 15 seconds, while Windows 95 started up in 47 seconds.



VIRTUAL PC 2.1 BRINGS WINDOWS 98 to the Mac and introduces Microsoft's Web-based OS navigation.

With Windows 98, Microsoft introduced a number of incremental improvements and built its Web browser, Internet Explorer, into the OS. Essentially a massive patch to the aging Windows 95, Windows 98 offers greater stability; compatibility with more hardware devices, including USB peripherals; a search program similar to Mac OS 8.5's Sherlock search utility; and the option to navigate Windows via the Web browserlike interface. These improvements naturally come with an increase in the minimum requirements, which is probably one of the reasons that Virtual PC 2.1 lists a G3 processor as a minimum requirement.



ONE OF VIRTUAL PC'S STRENGTHS is its control over the Windows environment via the easy-to-use PC Preferences box.

Virtual PC 2.1 offers all the features that made version 2.0 a great product, including the ability to copy and paste between environments, an amazingly easy installation process, shared Mac-PC volumes, an intuitive interface, a fast Start feature, and outstanding hardware support for your existing peripherals. Plus, iMac owners can use Virtual PC 2.1 for seamless support of iMac USB-native peripherals. Because Virtual PC is really a PC emulator, not a Windows emulator, users can also choose to install an Intel-based alternative OS such as Windows NT or IBM's OS/2.

Connectix has clearly improved an already outstanding product. With its low price, variety of new features, and Windows 98 support, Virtual PC 2.1 with Windows 98 is a no-brainer alternative to purchasing a PC or PC compatibility card for users with moderate needs for a Windows 98 environment. It's unfortunate that Microsoft's latest OS isn't stellar. Considering Windows 98's increased processor demands and relatively small feature bump, PC and Mac owners alike are better off sticking to Windows 95 unless they are in a Windows 98 network environment or need a particular Windows 98 feature. For Mac users who need to work with Windows, version 2.0 of Virtual PC with Windows 95 is probably the better choice until Connectix releases Virtual PC 2.1 with Windows 95 included.—*Rick Sanchez*

WINDOWS 98 FEATURES BROWSERLIKE FUNCTIONALITY. You can open folders in the same window with a single click and indicate clickable items with underlines.

GOOD NEWS: Improved stability. Windows 98 support.
BAD NEWS: Higher RAM and processor requirements than previous version.

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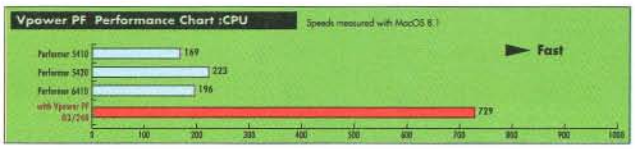

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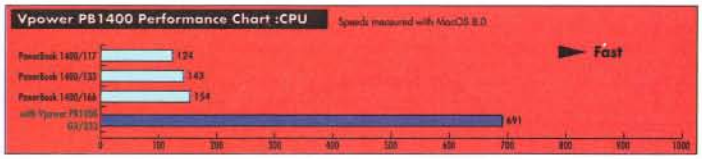

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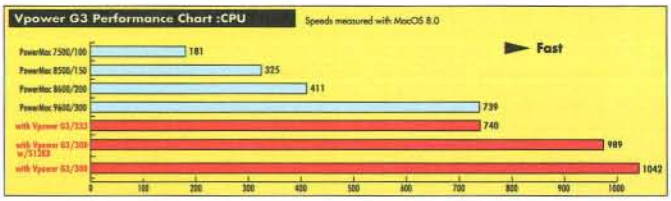

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Vpower G3/233	Power Mac 7300,7350,7500,7600,8500,8550,8600,9500 UMAX S900,S910	G3/233MHz	512KB/117MHz	$ 389
Vpower PB 1400 G3/233	Power Book 1400	G3/233MHz	512KB/117MHz	$ 499
Vpower PM 4400 G3/240	Power Mac 4400 Motorola Star Max 3000,4000	G3/240MHz	512KB/120MHz	$ 499
Vpower PM 4400 G3/300	Power Mac 4400 Motorola Star Max 3000,4000	G3/300MHz	1MB/150MHz	$ 899
Vpower PF G3/240	Power Macintosh/Performa 54xx,64xx Super Mac C500	G3/240MHz	512KB/120MHz	$ 499

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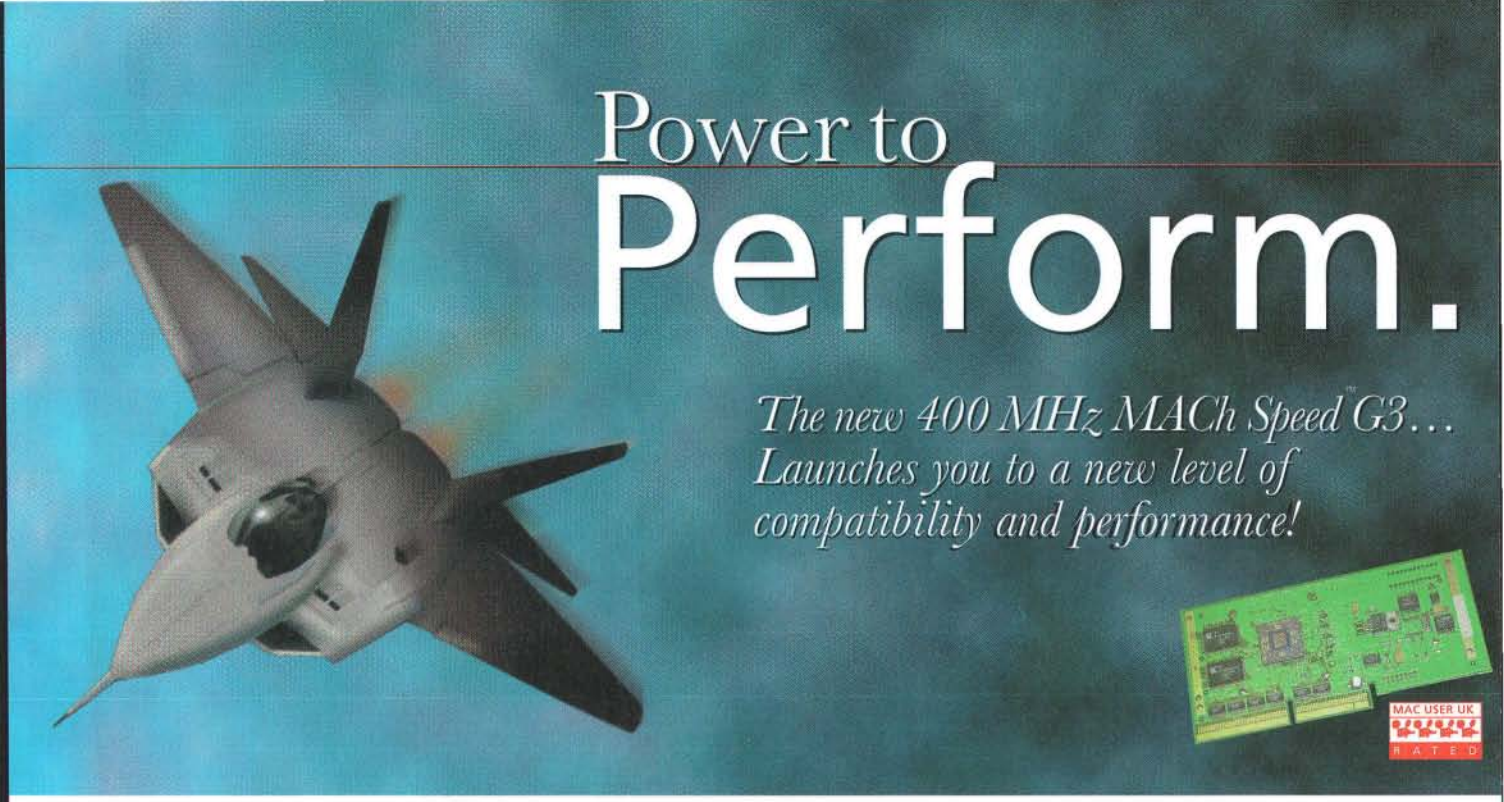

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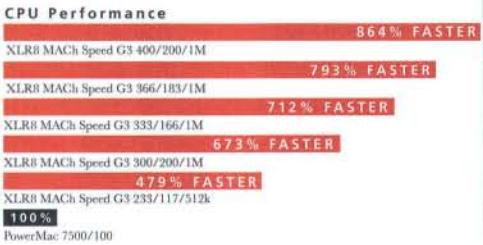

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Surf Express Deluxe

UTILITY

COMPANY: Connectix
CONTACT: 800-950-5880 or 650-571-5100, http://www.connectix.com
PRICE: $33 (SRP); $14.95 upgrade from previous versions of Surf Express to Surf Express Deluxe; free upgrade to nondeluxe Surf Express 1.5
REQUIREMENTS: PowerPC; System 7.5.3 or later; 16MB of RAM; 12MB of free hard disk space; CD-ROM drive; Open Transport 1.1.2 or later; TCP/IP-based Internet connection; AOL, Netscape Navigator, or Microsoft Internet Explorer, all version 3.0 or later

FIND A DEMO of Surf Express Deluxe on The Disc.

Contrary to what you might expect, Connectix's addition of the word *Deluxe* to the name of its Web browser accelerator Surf Express doesn't mean a slew of new features in this release. Instead, Surf Express Deluxe offers improved compatibility, a few minor tweaks and toggles, and only one significant new feature. Still, it's a worthwhile update.

SURF EXPRESS EFFICIENCY STATISTICS are right under your nose with the new control strip module.

COMBINE THE RESULTS OF SEVERAL SEARCH ENGINES on a single page with the new SuperSonic Search program.

The package consists of Surf Express 1.5 and SuperSonic Search 1.0. The Surf Express extension and program act as a proxy server with cache capabilities superior to those built into Microsoft Internet Explorer or Netscape Navigator. New in version 1.5 is support for America Online's browser, as well as compatibility with Mac OS 8.5 (unconfirmed, as this review was completed before 8.5's release).

In terms of performance, cached Web pages don't come screaming into sight "36 times faster," as Connectix claims. However, they do load noticeably faster than without Surf Express installed, especially if you employ the SmartFetch feature to download frequently visited pages automatically during idle periods (type *surf.express* in your browser's URL field to see what pages are prefetched).

Surf Express now comes with a control strip module that displays cache efficiency statistics and provides access to the related programs. New in version 1.5 are a Cache Control tab, which allows you to specify manually how often Surf Express should verify the contents of different sites; a News tab, which automatically downloads information about the program from Connectix; and a toggle to disable the utility altogether. For my money, the most invaluable feature remains FindCache, which allows you to search for and view words or phrases in previously visited pages.

Surf Express Deluxe's most significant addition is SuperSonic Search, which compiles the results from up to five different Internet search engines (AltaVista, Excite, HotBot, Infoseek, and Yahoo) into a single page of links that match your keywords or phrases. Unlike other metasearch tools, SuperSonic Search removes duplicates and dead links, and it allows contextual searches.

If you already own Surf Express, the free update to 1.5 is a must-have, and SuperSonic Search is more than worth the nominal fee for the upgrade to Surf Express Deluxe. Anyone with a standard modem connection to the Internet will find Surf Express Deluxe a welcome addition to the hard drive.—*Owen W. Linzmayer*

GOOD NEWS: Fast, efficient cache. A no-brainer to use. Supports all browsers. Mac OS 8.5 compatible. Ability to search cached pages. New, fast, and accurate metasearch feature. 30-day guarantee. Inexpensive.
BAD NEWS: "Deluxe" moniker overstates improvements. Speed boost exaggerated.

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Kids' Stuff

Rockett's Adventure Maker

COMPANY: Purple Moon
CONTACT: 888-278-7753 or 650-526-5000, http://www.purple-moon.com
PRICE: $29.95 (SRP)
REQUIREMENTS: Power Mac, System 7.1, 16MB of RAM, 15MB of free hard disk space, 2X CD-ROM drive, 256-color monitor or better

If you find children's interactive software either passive or limiting, you should take a look at Purple Moon's new addition to the Rockett series, Rockett's Adventure Maker. This entertainment title, which is geared toward girls, combines characters, role-playing, and creativity in the context of Rockett's school, Whistling Pines Junior High.

In this story-building title, you become a character and join Rockett and friends in adventures you create. From the main menu, you navigate between the Yearbook (where characters are stored), Make a Friend (where you design new characters), and New Adventure (where you create a story).

You create adventures using the given characters or design your own. Designing characters is very easy. Select body type, skin tone, hairstyles, and clothing styles. Then create an adventure from suggested storyboards or select a plan to build your own. For example, you can use school scenery or abstract backgrounds. You can even position and resize characters, as well as give them dialogue or new attitudes. Props are available, too. When you're done, print your adventure as a complete comic strip, or choose Save As Snapshot to save it as a JPEG for emailing or posting to a Web page.

THE MAIN INTERFACE features easy navigation among various workspaces where you create characters and stories.

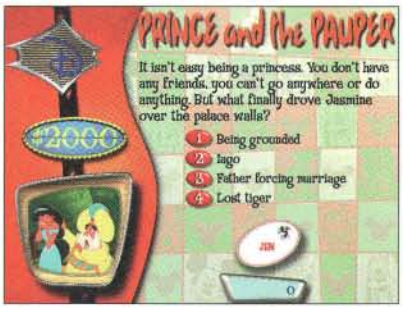
Rockett's Adventure Maker lets girls be totally creative. Once they master short storyboards, they can combine different ones to make longer, complex adventures. We definitely recommend this title.—*Jennifer Ho*

GOOD NEWS: Puts creativity into girls' hands. Narrative possibilities are virtually endless.
BAD NEWS: Needs a few more body types.

The D Show

COMPANY: Disney Interactive
CONTACT: 800-328-0368, http://www.disney.com/disneyinteractive
PRICE: $35 (SRP)
REQUIREMENTS: Power Mac, 90MHz or faster; System 7.5 or later; 24MB of RAM; 40MB of free hard disk space; 4X CD-ROM drive; 16-bit color monitor

The D Show is the Disney equivalent of the You Don't Know Jack series. It quizzes you and two other players on Disney trivia, which covers television shows, live-action films, animated features, theme parks, characters, and general Disney lore. After playing a couple of rounds with your friends and family, you'll be surprised at how much trivia you've retained over the years.



DO YOU REMEMBER ALADDIN? The answer to this question is "father forcing marriage."

In each show, there are six trivia categories. For example, in Dogwatch you must answer questions about Disney's famous dogs, such as Goofy. Also, in each show two bonus rounds challenge your visual knowledge of characters, places, and things. These rounds feature a variety of games, such as Before and After (where you match preliminary character sketches with final ones), Cel-O-Vision (where you match characters with their background scenery), and Casting Call (where you guess a show before all its characters appear onscreen). The D Fibulator poses the final challenge, in which you must answer true-false questions before time runs out.

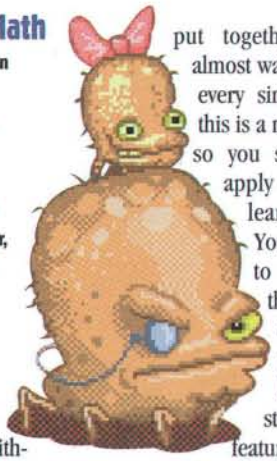
IN CEL-O-VISION you must match the characters with the right background.

Whether you're really young or not so old, The D Show is a lot of fun to play. It throws more than 540 multiple choice questions, 450 D Fibulator questions, and 150 film clips at you, all of which bring back fond memories.—*JH*

GOOD NEWS: Good variety of bonus rounds. Family fun in multicontestant mode. Lots of video clips from animated features. BAD NEWS: Requires previous knowledge of all things Disney.

Monster Maker Math

COMPANY: Houghton Mifflin Interactive
CONTACT: 617-503-4888, http://www.hminet.com
PRICE: $44.95 (SRP)
REQUIREMENTS: 68040 or faster, System 7.1 or higher, 8MB of RAM, 8MB of free hard disk space, 2X CD-ROM drive, 256-color display or better



The words *Freakin' Awesome* faithfully describe this educational title from Houghton Mifflin Interactive, whose Awesome Animated Monster Maker Math features totally freaky, awesome monsters. Disguised as an interactive adventure, Monster Maker Math challenges kids 7 to 10 years old to solve math questions and puzzles. For example, you must build a monster from 7 to 13 parts, and it has to cost more than 200 money bugs.

The monsters are so fun to put together that you almost want to try using every single part, but this is a math program, so you should try to apply those hard-learned rules. You don't have to worry about the math questions' difficulty too much, because Monster Maker Math features automatic leveling, which responds to your performance. Parents can even customize content so kids get extra practice in those trouble spots. Monster Maker Math is a great way to learn and practice a subject that can be boring and dreary.—*JH*

GOOD NEWS: A totally fun way to learn and practice math and logic skills. Monsters are cool and weird.
BAD NEWS: A bit pricey.

Madeline's Rainy Day Activities

COMPANY: Creative Wonders (The Learning Company)
CONTACT: 800-543-9778, http://www.creativewonders.com
PRICE: $19.99
REQUIREMENTS: 68040 or faster, System 7.1 or later, 8MB of RAM (16MB for PowerPC), 5MB of free hard disk space, 2X CD-ROM drive, 256-color display, color printer recommended

Madeline's Rainy Day Activities, the latest product in Creative Wonders' Madeline line, is educational software for children four years old and up. Although all young children can benefit from the activities, Madeline's subject matter is targeted primarily at girls, with female role models and characters.

Rainy Day Activities includes memory challenges, shape puzzles, concentration tests, pairing, geography quizzes, vocabulary in French and Spanish, and general creative fun stuff such as dress-up. Navigating the main interface is easy, as Madeline guides and prompts you to select an activity in her French accent. Best of all, you can print your creations for friends and family.—*JH*

RAINY DAY ACTIVITIES FEATURES A SIMPLE INTERFACE that lets kids navigate to activities quickly and easily.

GOOD NEWS: More than 100 activities. Super value for price.
BAD NEWS: Limited appeal for boys.

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Quicken 98	1
Troubleshooting 7.5	4
Word 6.0	6

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how to

The Web is *our* playground, but you can play on the swings.

Get Your Image Ready for the Web

by Maria Langer

News

Images are an important part of any Web page. Drawn graphics add visual appeal and break up plain text. Photographs illustrate exactly what your product, family, or new car looks like. What many people don't realize (or at least don't adhere to) is that images created for the Web have different considerations than those created for printing.

In order to display an image, Web browser software must download the image from the Web server to your computer. The speed at which the image appears on your screen depends on the size of the file, the speed of your Internet connection, and the type of image file. Keeping the file size small is a good way to keep your Web site visitors happy so they visit more of your site.

This article shows you how to use Adobe ImageReady to get GIFs and JPEGs ready for prime time. Don't worry if you don't use ImageReady—you can apply the concepts and principles to most image editors. (To learn about optimizing *text* for the Web, see "A Greenhorn's Guide to Taming Wild, Wild Web Type," p38.)

FIND A DEMO of ImageReady on The Disc.

FROM WEB LOGOS to ATC gang photos, we know the secrets behind Web-ready images.

Rule 1
Keep Image File Size Small

When creating Web images, you can reduce the size of an image file in a number of ways:

- **Reduce the image's size or dimensions**—The smaller the image, the smaller the file.
- **Reduce the image's resolution**—A Web image's resolution should be reduced to 72 dots per inch (dpi). There's no good reason for any higher resolution. (Adobe ImageReady automatically sets an image's resolution to 72 dpi.)
- **Reduce the number of colors in a GIF image**—The fewer colors in the image, the smaller the file.
- **Reduce the compression quality of a JPEG image**—The lower the quality, the smaller the file.

Rule 2
Choose the Right File Format

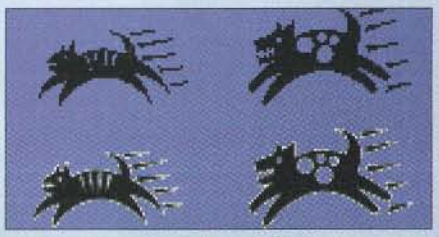
- **GIF,** an 8-bit color format, displays up to 256 colors. GIF is suitable for images with flat colors, sharp edges, and crisp detail. Examples might be drawn artwork or images containing type. GIF gives you some control over the size of your images by enabling you to specify the number of colors in the image. The fewer the colors, the smaller the file.

- **JPEG,** a 24-bit color format, display up to 16,000 colors. JPEG is suitable for images with continuous tones, such as photographs. JPEG gives you some control over image size by letting you vary image quality.

- **PNG** is another Web-image format, but it's not widely used because only the most recent versions of browsers directly support it. It comes in two flavors: PNG-8 for 8-bit color and PNG-24 for 24-bit color. PNG has some benefits over GIF and JPEG, but I don't recommend using it until it is more widely supported.

Rule 3
Include Appropriate Image Options

- You can apply transparency or matting to GIF, JPEG, or PNG images. This maps a color within the image so the Web page's background color or image can show through. This feature is ideal for nonrectangular images. Just be aware that antialiasing around the edge of an image can cause haloing.
- Interlaced GIF or PNG images or progressive JPEG images appear gradually as they load. This enables the viewer to see a low-resolution version of the image while waiting for the full image to load.



HERE ARE TWO IMAGES placed on a dark-colored background. The top image was created with antialiasing turned off; the bottom image was created with it turned on. The gray or white dots around the bottom image are an affliction known as haloing, which is more apparent when the image appears on a dark background.

Preparing a Graphic for the Web with ImageReady

1 Open or create the image with ImageReady

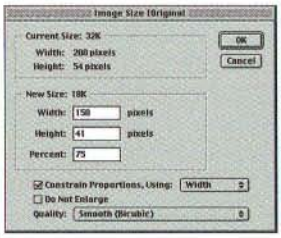
ImageReady has many of the same graphics tools and features you'd find in Photoshop. It can open and import images in the following file formats: Illustrator, Photoshop, BMP, EPS, Flashpix, GIF, JPEG, PCX, PDF, PICT and PICT resource, PIXAR, PNG, Targa, and TIFF. When opening Illustrator and Photoshop images, ImageReady preserves all image layers so you can manipulate them with ImageReady. This illustration shows a simple button graphic created in Photoshop, but it could also be created in ImageReady.

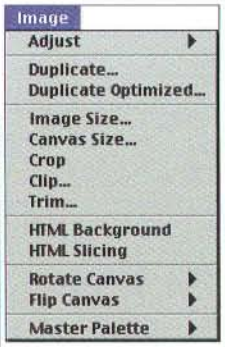
2 Resize the image

You can do this two ways: by cropping or by using the Image Size dialog box.

■ To crop the image, use the Marquee tool to select the part that you want to keep and choose Crop from the Image menu.

■ To use the Image Size dialog box, choose Image Size from the Image menu. Either enter new pixel dimensions in the Width and Height edit boxes or enter a resizing percentage in the Percent edit box. By default, ImageReady resizes proportionally; if you want to change the proportions, turn off the Constrain Proportions check box before entering values. To preserve image quality, don't enter a value over 100 in the Percent edit box. When you're finished, click OK.





3 Select file format and color palette options for optimizing the image

On the Optimize palette, choose GIF from the Optimized File Format pop-up menu. Then choose an option from the Color Reduction Algorithm pop-up menu:

■ **Perceptual** creates a color palette that gives priority to colors best perceived by the human eye. This is the default option and generally gives you the truest colors.

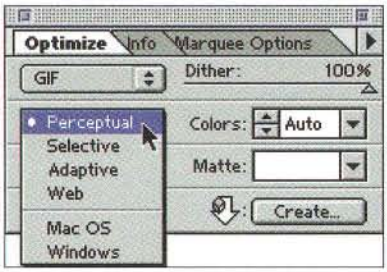
■ **Selective** is similar to Perceptual, but works faster and gives slightly different results.

■ **Adaptive** creates a color palette that gives priority to the colors that appear most in the image.

■ **Web** creates a color palette using the 216 Web-safe colors.

■ **Mac OS** creates a color palette using the 8-bit Mac OS system color palette.

■ **Windows** creates a color palette using the 8-bit Windows system color palette.

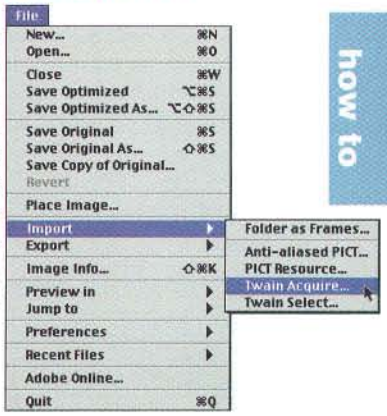


(continued on p78)

Preparing a Photograph for the Web with ImageReady

1 Open or scan the image into ImageReady

Choose Open from ImageReady's File menu to open an existing scanned photograph or Photo CD PICT preview image. Or, if you have a scanner, choose Twain Acquire from the Import submenu under the File menu and use your scanner's software to scan a photograph directly into ImageReady.



how to

2 Resize the image

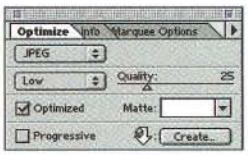
You can do this two ways: by cropping or by using the Image Size dialog box. See step 2 in "Preparing a Graphic for the Web with ImageReady" for a detailed set of instructions.

3 Select file format and quality for optimizing the image

In the Optimize palette, choose JPEG from the Optimized File Format pop-up menu. Then choose an option from the Compression Quality pop-up menu or use the slider to set a numerical quality. The higher the quality, the better the image will look, but the larger it will be.

4 Preview the optimized image

If necessary, turn on the Optimized check box in the Optimize palette. Then click the Optimized tab in the Image window to see the optimized image. The sizes of the original and optimized image, as well as the download time, appear at the bottom of the window. You may want to try different quality settings to see how they affect the optimized image.



(continued on p78)

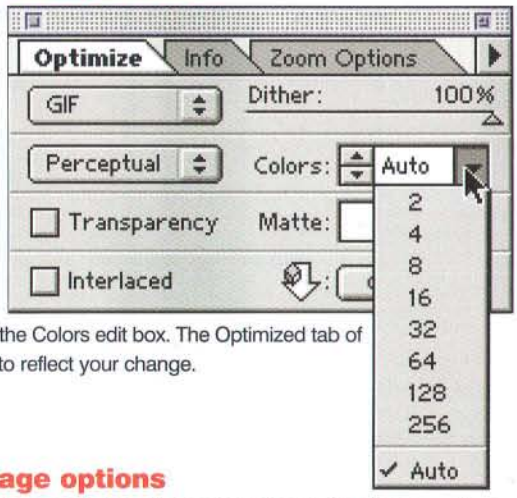
("Preparing a Graphic for the Web" continued from p77)

4 Preview the optimized image

Click the Optimized tab at the top of the image window to see what the image will look like when optimized for the Web. To magnify the image as illustrated here, click the Zoom tool on the tool palette and then click the image. The sizes of the original and optimized image, as well as the download time, appear at the bottom of the window. You can change the information display at the bottom of the window by choosing different options from the pop-up menu there. (If you don't have ImageReady or another Web-oriented program, you will have to save or export the image as a GIF and drop it in a browser to check it.)

5 Try different color palettes

With the optimized image displayed, select different options from the Color Reduction Algorithm pop-up menu on the Optimize palette. You can further reduce the size of the image file by reducing the number of colors. In the Optimize palette, choose an option from the Colors pop-up menu or enter a value in the Colors edit box. The Optimized tab of the image window updates to reflect your change.

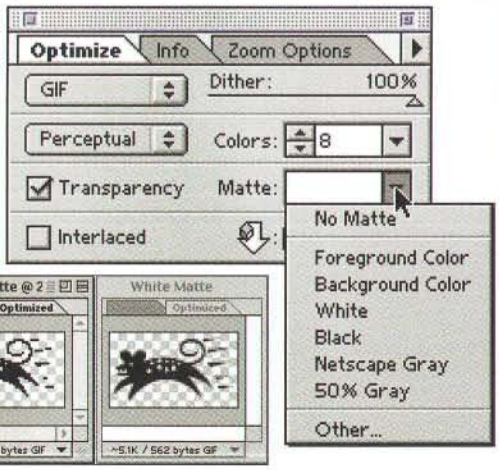


6 Set other image options

In the Optimize palette, turn on check boxes for other desired image options.

■ If you turn on the Transparency check box, you can choose No Matte from the Matte pop-up menu to create hard-edged transparencies, or choose a color from the Matte pop-up menu to blend a specific color with the edges of an image. Setting either option prevents haloing. (This option is not appropriate for our News button, since it has a rectangular shape. The other image you see below is an example of when you may want transparency.)

■ The Interlaced option is appropriate for any image, but isn't very noticeable with smaller images that load very quickly.



(continued on p79)

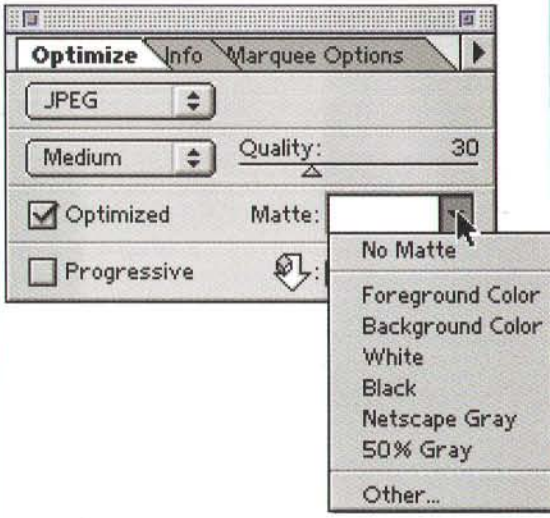
("Preparing a Photograph for the Web" continued from

5 Set other image options

In the Optimize palette, set up other desired image options:

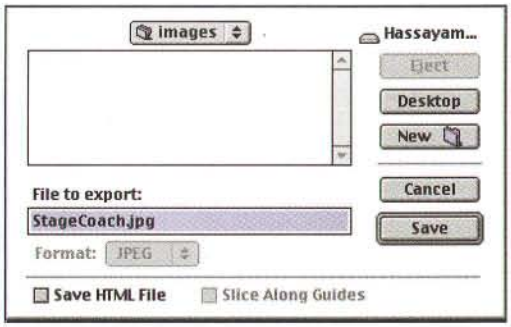
■ To make the image's background transparent, you can choose an option from the Matte pop-up menu. I explain these options in step 5 of "Preparing a Graphic for the Web with ImageReady." (This option is not appropriate for the sample image since it has a rectangular shape.)

■ The Progressive option is appropriate for any image, but not all Web browsers support it. You may want to leave this option turned off, especially if the image isn't very large.



6 Save the optimized image

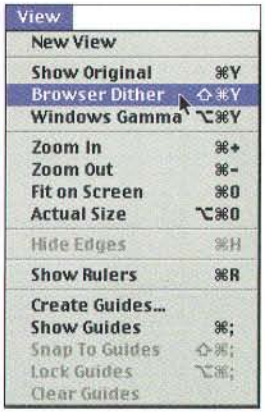
Choose Save Optimized from the File menu. In the Save As dialog box that appears, enter a server-compatible name for the image that ends with either *.jpg* or *.jpeg* (uppercase or lowercase). The image is now ready to use in your Web pages. Important note: If you ever need to modify a JPEG image, don't open the JPEG file. Instead, open the original image, modify it, and save its optimized image in JPEG format. Resaving a JPEG file in JPEG format further reduces the quality of the image. You're done!



("Preparing a Graphic for the Web" continued from p84)

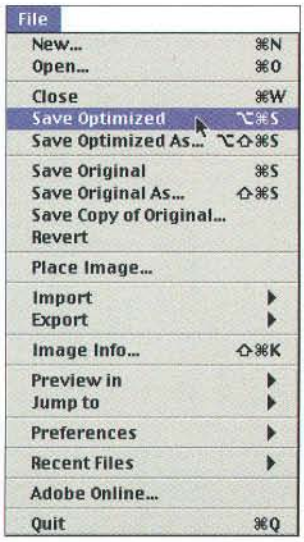
7 Shift colors to prevent or minimize browser dither

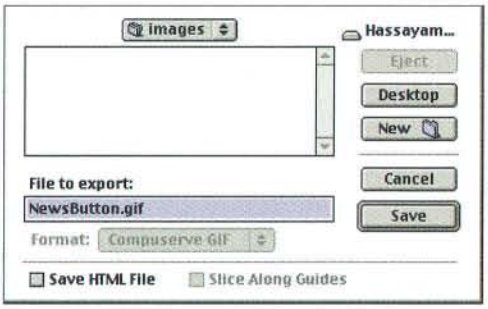
Choose Browser Dither from the View menu to display the image as it would appear in a Web browser on a computer with an 8-bit color monitor. The colors in the optimized image are dithered using colors from the Web-safe color palette. (There is no change if you selected Web from the Color Reduction Algorithm pop-up menu because Web-safe colors are already being used.) Choose Select All Colors from the menu in the Optimized Colors palette to select all colors in the palette. Then click the Web Shift button at the bottom of the Optimized Colors palette. Diamonds appear in each color to indicate that the color is Web-safe. The amount of dithering in the image also changes. (Note: You can also shift colors on a color-by-color basis.)



8 Save the optimized image

Choose Save Optimized from the File menu. In the Save As dialog box that appears, enter a server-compatible name for the image that ends with *.gif* (uppercase or lowercase). The image is now ready to use in your Web pages. You're done!





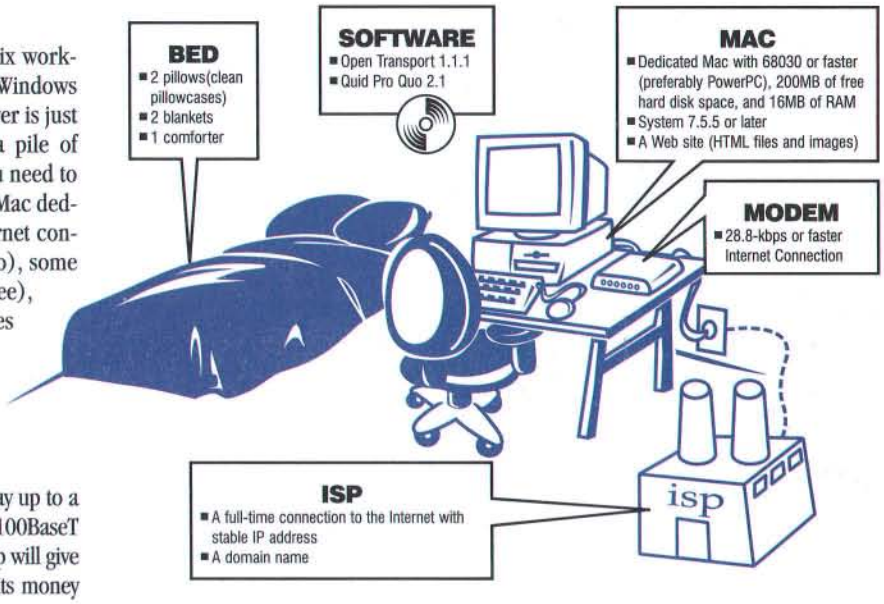
how to

Make a Mac Web Server (in your bedroom)

by David Reynolds

The myth that you need a high-end Unix workstation—or, worse yet, a (shudder) Windows NT box—to set up your own Web server is just that, a myth. It's a lie. It's fiction. It's a pile of steaming manure. (Sense a trend?) All you need to make your own Web server is a midrange Mac dedicated to the task, a round-the-clock Internet connection (even a modem connection will do), some server software (in this case it's even free), and—of course—a bunch of HTML files and images. Just to make sure you've got everything, take a look at our illustration (you can get by with less than this, but the results get uglier the more you scale down).

If you have the wherewithal, go all the way up to a Power Mac G3 hooked up to a T1 via a 100BaseT Ethernet card running Mac OS 8.5. This setup will give any single-processor Web server a run for its money (don't let any Unix-preaching OS snob convince you otherwise). Follow along as we show you how to make it all come together.



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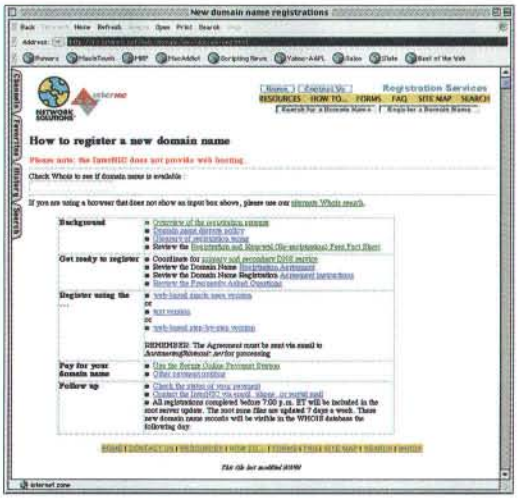
FIND QUID PRO QUO on the Web at http://www.socialeng.com/html/dowload.html



1 Get a Domain Name

Figuring out a domain name that hasn't already been taken is the tough part. Make a list of likely candidates and check them out at InterNic—the organization in charge of assigning domain names—at http://rs.internic.net/cgi-bin/itts/whois.

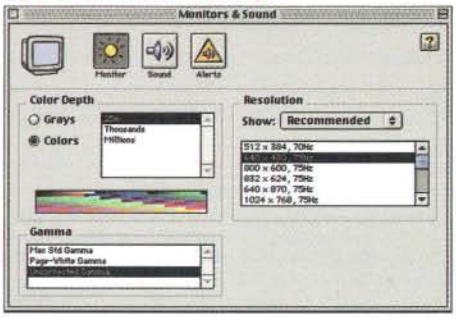
Many ISPs are happy to take a few bucks and work out the messy details of setting up a domain name for you, but if you want to save a little cash and get a better understanding of the domain-name system, you can jump through InterNic's hoops yourself. Be sure to talk to your ISP beforehand, though, and get permission to use a primary and secondary DNS (Domain Name Server) service. When you register your domain name, it gets assigned to your IP address through the global DNS system. If you give InterNic a couple of random DNS addresses when you don't have permission to do so, InterNic will become upset and do bad things to you to get even. You will also need to scrape together $70, which covers the registration and most updates for two years. Then just pop over to http://rs.internic.net/cgi-bin/domain and register your domain. InterNic will ask you to submit your domain name and email address, then it will take you to a Web page that asks for all kinds of contact information. After this, you'll need to pay for your Web site. You can do so at http://payments.internic.net, which takes all varieties of credit cards. In a couple of days your domain name will become active. Contact the folks at your ISP and have them connect things such as email aliases and so on. After all, what good is having the domain name goober.com if you can't get your email there?

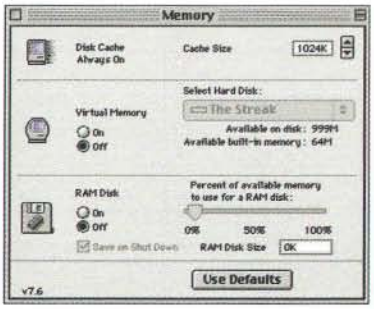
2 Gear Up Your Server

Now that you have your domain name, you'll need to prepare the server iron for your home Web presence. You want to set up the stablest, fastest Mac possible. Format your server's hard drive (we do believe in bit rot here, so it's best to start from a clean slate). If you're not using HFS+ (and there's no compelling reason to do so in this case), you may want to partition your hard drive into separate system and server sections. This will keep file sizes smaller, make your Mac just a little more secure, and theoretically increase the speed of your system. Do a clean install of the system software (System 7.5.5 or later, preferably Mac OS 8.1 or later if your Mac can handle it). When you do the clean install, reduce the Control Panels and Extensions to an absolute minimum. After you've finished, make sure you have Open Transport 1.1.1 or later. If you don't, get a new version from Apple's Web site (http://www.apple.com). Then copy your Web site over to the server.

3 Configure Your Mac for Speed and Stability

Since you won't be using your server as a workstation (at least you shouldn't), you can make adjustments to your Mac that you wouldn't ordinarily make. First, disable all unnecessary extensions—and we mean all. Pay special attention to Desktop Printing, Apple Menu Options, and Energy Saver. They are a bit buggy, and since you won't be doing a ton of work on this machine, you won't miss the functionality they provide. Now make the following settings:



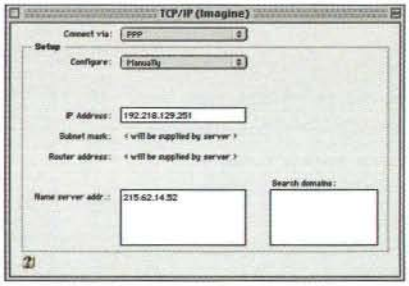


- Set the monitor resolution to 640 by 480 at 256 colors.
- Turn off virtual memory. Your Web server prefers real RAM, and if you don't have enough to run it, you'll need to upgrade.
- For a Mac running Mac OS 8 or later, increase the disk cache to 1,024K. For earlier system versions, turn it all the way down to 32K.

These settings will marginally improve the performance and stability of your system.

4 Set Up the Networking

Before you set up Open Transport, you'll need to get two things: a permanent IP address and a full-time Internet connection. You're not going to get much traffic if your site is only available three hours a day at different IP addresses.



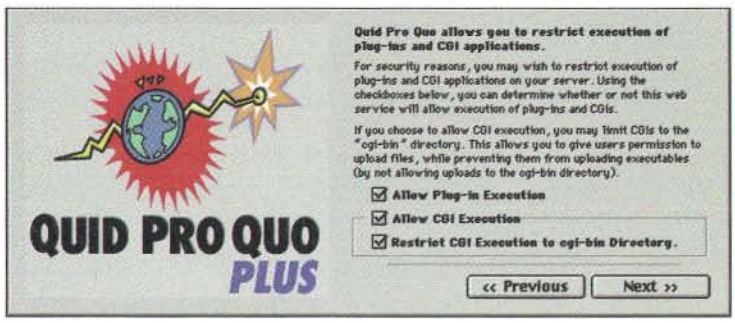
To get a permanent IP address, you'll need to negotiate with your Internet service provider. Many ISPs will set up a permanent IP address for a small fee. To get a full-time Internet connection, you'll either need to have a second phone line or separate digital line installed. Unless you plan on getting lots of traffic, serving the site via a modem is fast enough. Ask your ISP about its policy on full-time connections.

Set up Open Transport with your new IP address. If you've been connecting to the Internet via PPP, your IP address has probably been assigned automatically. Select Manually from the Configure pop-up menu in the TCP/IP control panel, and enter your IP address in the IP Address box. If you have an Ethernet connection, the procedure's the same.

5 Set Up the Web Server

We use Social Engineering's Quid Pro Quo server software—it's fast, solid, and free. The company also makes commercial products, Quid Pro Quo Plus and Quid Pro Quo Secure, for higher-end needs.

Setting up Quid Pro Quo is easy. Just run the installer, then launch the program. It asks you several high-geek-factor questions, such as what port you'll be using (80). Don't worry about these; just leave them at the default settings. In a couple of instances you must choose something, but they are all things you can make up on the spot, such as a user name for remote administration. Once you complete the interview, your Web server will be up and running.



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to spread holiday joy with a gift to a distinguished drinking colleague, or pick up a little something for that special cellmate. There's nothing wrong with last minute shopping, like that can of shaving cream you got her at the Stop-N-Sack on your way home from the bar last Christmas.

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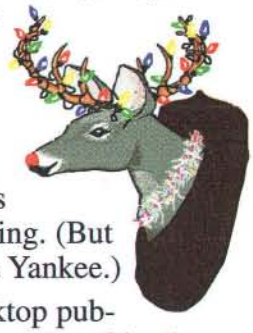

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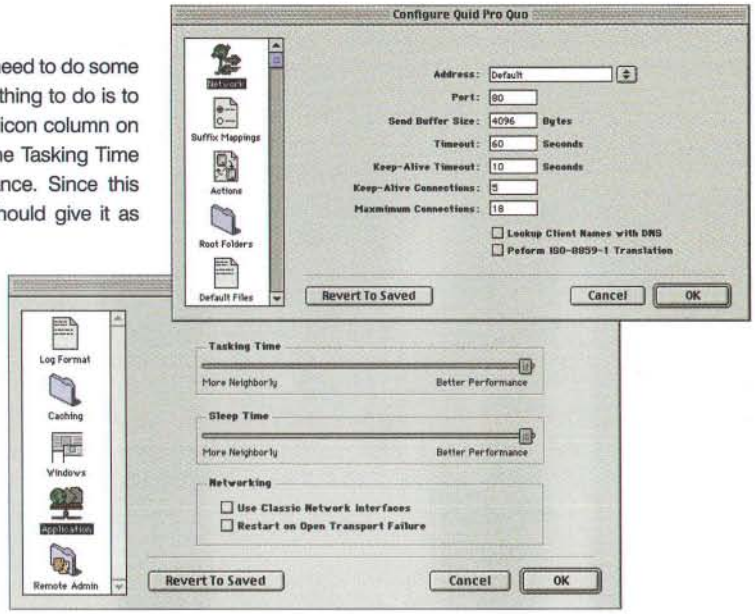
6 Global Settings

With your Web server up and running, you'll need to do some fine-tuning to get the most out of it. The first thing to do is to select Global Settings from the Control menu. In the icon column on the left, select the Application icon, then crank up the Tasking Time and Sleep Time slider controls to Better Performance. Since this Mac's sole purpose is to serve Web pages, you should give it as much power as possible.

Click the Caching icon to pop up a panel that lets you play with the file cache. Make sure that both the Enable File Cache and Always Check File Modification Dates boxes are checked. Then give Quid Pro Quo a nice, fat Maximum Cache Memory Size, such as 4,096K. This lets the server software load as much of the Web site into RAM as possible, which speeds things up considerably. Click OK to continue.

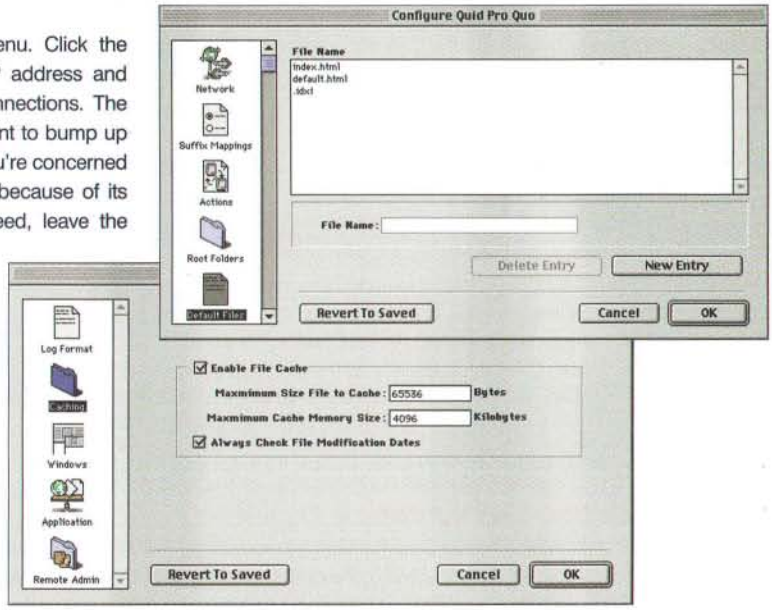


7 Server Settings

Select Server Settings from the Control menu. Click the Network icon. Here you can choose the IP address and change things such as the port and number of connections. The default settings work fairly well, although you may want to bump up the various time-outs and number of connections if you're concerned about people being unable to connect to your site because of its amazingly high traffic. Finally, in the interest of speed, leave the Lookup Client Names With DNS option unchecked.

Now select the Default Files icon. In this window, you can specify a default file other than index.html or default.html as the file served up when someone comes to the Web site. If your index file isn't named index.html or default.html, you'll need to either rename your Web site's index file to match one of the two choices, or enter a new file name using the New Entry button.

That's it for now. There are tons of other settings here—too many for us to go into in any useful way. Consult your Quid Pro Quo manual for more info.



Setting Up Multihoming and Multiple Services

Quid Pro Quo Plus—the commercial version—can serve up multiple Web sites on a single Mac with a single Internet connection. To set it up, you'll need to install Open Transport 1.3 (from OS 8.1 or later) and create an IP Secondary Addresses file. Here's how.

Create a text file using SimpleText and name it *IP Secondary Addresses*—it must have this name. Save the file to your Preferences folder. In the file, enter the secondary IP addresses, the subnet masks, and the router addresses for each additional IP address. The letters *ip=* should precede each IP address, *sm=* goes before each subnet mask, and *rt=* before each router address. Each set should be on its own line. A file that sets up two additional IP addresses (for a total of three) should look something like this:

```
ip=192.168.22.200 sm=255.255.255.0 rt=192.168.20.1
ip=192.168.22.201 sm=255.255.255.0 rt=192.168.20.1
```

This feature is unique to Open Transport 1.3. It won't work with earlier versions of the networking software.

Now install Quid Pro Quo Plus and set it up with multiple services using the Services menu. Assign each service a different Web site, then assign the IP address associated with that site to the service.

There you have it—clients connecting to any of the IP addresses that a Quid Pro Quo service covers will have the appropriate Web site served to them.

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ask us your questions

We answer your technical questions, no matter how simple or complex.

Q I've recently upgraded my Power Macintosh G3 to Mac OS 8.1, and now it doesn't recognize the microphone, neither in the Monitors & Sound control panel nor on the Control Strip. What can I do?

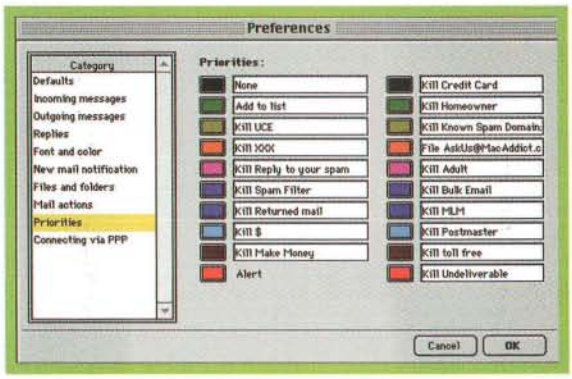
A In the Monitors & Sound control panel, click Sound. Then in the Sound Monitoring Source pop-up menu, choose Sound In. For some reason, Apple felt it necessary to change the wording of the choices. Go figure.

Q I use Claris Emailer mail actions to try to filter out spam. Sometimes, however, a valid email gets thrown into my Potential Spam folder, and I can't figure out why without knowing which mail action put it there. Is there a way to tell which particular mail action acted upon an individual incoming message?

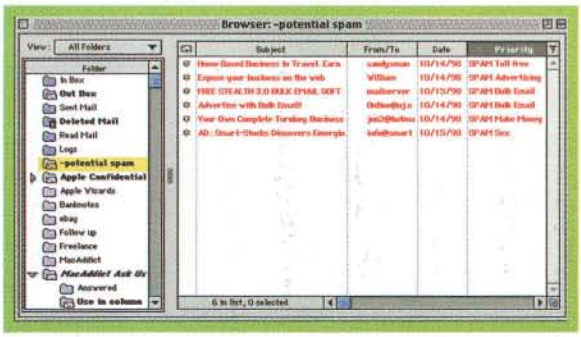
A Although it's a great feature idea, this isn't something Emailer tracks automatically. Fortunately, Emailer is flexible enough so you can add this capability in a roundabout way (you can also modify this tip for use with other email programs).

Start by choosing Preferences from the Setup menu. In the Category scroll box, select Priorities. The right portion of the window fills with 19 user-definable priority colors and labels. Instead of assigning labels such as Back Burner, Immediate Action, and so forth, fill in the blanks with the names of the mail actions you use to filter spam, such as Kill XXX or Delete Porno. When you're done, click OK.

From the Setup menu, choose Mail Actions. Double-click an existing spam filter (I'll use the example of Delete Porno), then click Define Actions. In the Action Entry window, the Set Priority pop-up menu should contain the names of your spam filters. Choose Delete Porno from this menu, then click Save. Whenever a message triggers your Delete Porno mail action (because the subject or body text contains the word *pornography*, for example), Emailer assigns its priority to Delete Porno, which you can see as one of the columns in the Emailer browser's In Box.



PRIORITY LABELS CAN BE ANYTHING you want, so assign them the same names as your spam filters.



WITH PRIORITY LABELS THAT MATCH mail action names, you can tell which spam filter an incoming message triggered.

Q In the Finder, if I choose Find from the File menu (Command-F), there are options to find items by file type and/or creator. If I choose either of these criteria, what values do I enter into the blank fields? Is there a list of abbreviations or codes or whatever?

A The Mac OS uses a file's four-character type and creator code (hidden from normal view, even in the Get Info window) to keep track of different kinds of files and the applications that created them. That's how the Mac knows which application to launch when you double-click a document. Apple doesn't release the list of creator codes for security reasons, but you can find out a file's type and creator codes very easily. Just drag a file from the Finder desktop or window into the Find window and release it to fill in the blanks with that file's type and/or creator. You can also use this trick for any of the other criteria in the Find File window. Whatever choices you have **[continued on page 86]**

Tech Support tip

In over two years of writing this column, I've received in excess of 8,000 emails from readers on a bewildering range of topics. Many of you resort to contacting me after receiving no reply to emails sent to software publishers and hardware manufacturers. That's understandable, and I try to help whenever possible, but the simple fact of the matter is that nobody knows a product better than the producer, so the company should be your primary source of technical support. All too often, emails sent to a company seem to disappear into a black hole, whether intentionally or not. If you don't get a response to your email within one or two days, escalate the encounter by calling the vendor on the phone. It's far easier to ignore an email than to blow off a live human being on the telephone. Don't be afraid to pick up the phone if it's a long-distance call. Toll calls are remarkably cheap these days (I pay less than 10 cents a minute, every day, all day, everywhere in the United States), and having a person diagnose your problem in real time sure beats a series of long, cumbersome email exchanges fraught with the usual misunderstandings.

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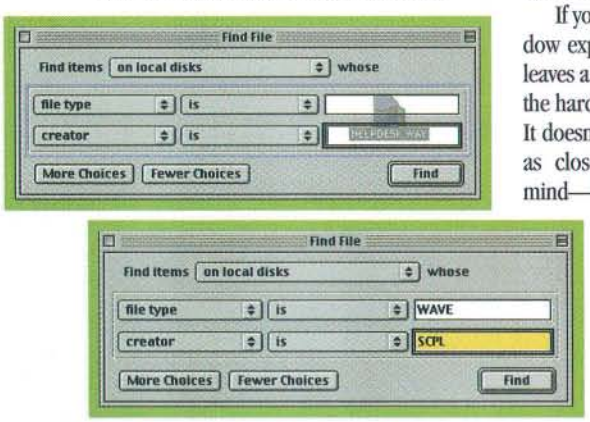
[continued from page 84]

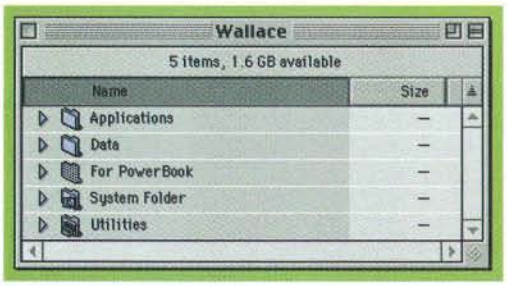
selected, when you drag and drop a file onto the window, its attributes fill in the fields.



DETERMINE TYPE AND CREATOR CODES easily by dragging and dropping a file into the Find File window.

Q I'd like to be able to enlarge the active window with a single mouse click or keystroke to the full size of my iMac's screen. I realize that maybe this isn't necessarily an iMac-specific issue, and that it's possible to resize a window manually by dragging the resize box in the bottom right corner. However, that's quite awkward and somewhat time consuming to do precisely.

A Ah, it's always refreshing to get a simple question that takes one back to newbie days. You're right. This issue isn't specific to the iMac; it applies to all Macs, as window controls are part of the operating system. Most windows have several boxes in their title bars. The one on the far left is called the close box; clicking it or pressing Command-W closes the window. If you are running System 7.5 or later with WindowShade installed and active (called Collapsing Windows in the Appearance control panel in Mac OS 8.0 or later), two boxes appear on the right side of the title bar. Clicking the rightmost box, or double-clicking the title bar itself, collapses the window, leaving only the title bar visible. Repeating the process expands the window to its original size. Next to the collapse box is the zoom box. In the Finder, clicking the zoom box enlarges the window only as much as is needed to display the full contents. Clicking again returns the window to its previous size.



OPTION-CLICK THE ZOOM BOX to force a Finder window to expand to fill the screen.

If you Option-click the zoom box, the window expands to fill the screen, except that it leaves a small strip along the right edge so that the hard drive and Trash icons remain visible. It doesn't exactly fill the entire screen, but it's as close as you're going to get. Keep in mind—this behavior is only guaranteed in the Finder. Other programs may slightly alter how the zoom box works, possibly ignoring the Option-click behavior altogether.

Q I have been using Word 98 for several months now and have extensively customized the menus and toolbars. I recently purchased a Power Mac G3/300 and would like to transfer all the customized menus to the new machine. Copying what preferences I could find didn't seem to work. I have searched Microsoft's site to no avail. Any suggestions?

A Microsoft sure puts a bunch of preference files in your System Folder, so it's understandable that you may have missed the right one. What you want to do is reinstall the Word application from the original CD onto your Power Mac G3, just to make sure all the myriad pieces get put in the right places. Then manually copy the file called Word Settings (8) from the Preferences folder inside the System Folder on your old Mac to the same location on your new Mac. That should make all of Word's customized menus look the same on both computers.

Q I heard that it was better for my Mac to put it in Sleep mode as opposed to shutting it down. Is this true? I am a full-time student and would thus be using my Mac for two to three hours one or two nights a week, and then on the weekends. Should I leave it in Sleep mode the remainder of the time or just shut it down? I would like to do whatever is best for the computer.

A As a freelance writer, one of my profession's most cherished fringe benefits is sleeping late, so you might think I'd just go with those who say you should put your Mac to Sleep. If only it were that simple. As Bertrand Russell once opined, "The most savage controversies are those about matters as to which there is no good evidence either way." The noted British philosopher wasn't talking about the debate between Sleep and Shut Down, but his conclusion certainly applies here. At the risk of oversimplifying the matter, let's look at each side.

When you choose Shut Down from the Finder's Special menu, the Mac closes open files, updates the invisible desktop file, ejects removable media, and kills the power to the CPU and monitors. When you subsequently turn on the computer, the Mac must go through the startup process (which can take several minutes, depending on the number of extensions and control panels you have installed), and you must relaunch applications and open documents you wish to use. On the other hand, if you choose Sleep instead of Shut Down, the Mac goes into a low-power mode and waits patiently for you to tap the keyboard to wake it almost instantly, with everything just as it was when you left it.

From the standpoint of saving time, Sleep sure beats Shut Down, but there are other factors to consider.

On PowerBooks, Sleep is definitely the way to go, because the portables are designed with power conservation in mind. Putting a PowerBook to Sleep turns off the screen, spins down the hard drive, and cuts battery use to almost nothing (a sleeping PowerBook can maintain the contents in memory for up to a month on a fully charged battery, or indefinitely on AC power). The only time I use Shut Down on my PowerBook is when I want to restart with different extensions, change SCSI devices, or ship the computer (I leave it in Sleep mode when traveling so I can speed my passage through security checkpoints). On PCI-based desktop Macs, Sleep is less helpful. Basically, Sleep just cuts power to the monitors and spins down the hard drive. The energy savings are not as dramatic because the CPU continues to draw full power. What's more, the fan continues spinning and making noise. For this reason, choose Shut Down instead of Sleep if you are not going to use your desktop Mac within a few hours.

Some worrywarts contend that the stress of starting up the Mac is harmful to its electrical components, and say for that reason alone you should use Sleep instead of Shut Down. In theory they may have a point, but in practice I've never had any hardware trouble attributable to using Shut Down with the many Macs I've owned over the years. On the contrary—by shutting down, I force the Mac to start fresh every morning, and that clears up a lot of potential software problems.

Owen W. Linzmayer (askus@macaddict.com; http://www.netcom.com/~owenink) is a San Francisco–based freelance writer and the author of the recently released book, *Apple Confidential: The Real Story of Apple Computer, Inc.* Please submit technical questions or helpful tips directly via email or c/o *MacAddict*, 150 North Hill Dr., Suite 40, Brisbane, CA 94005.

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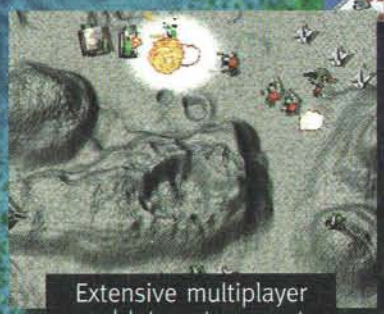

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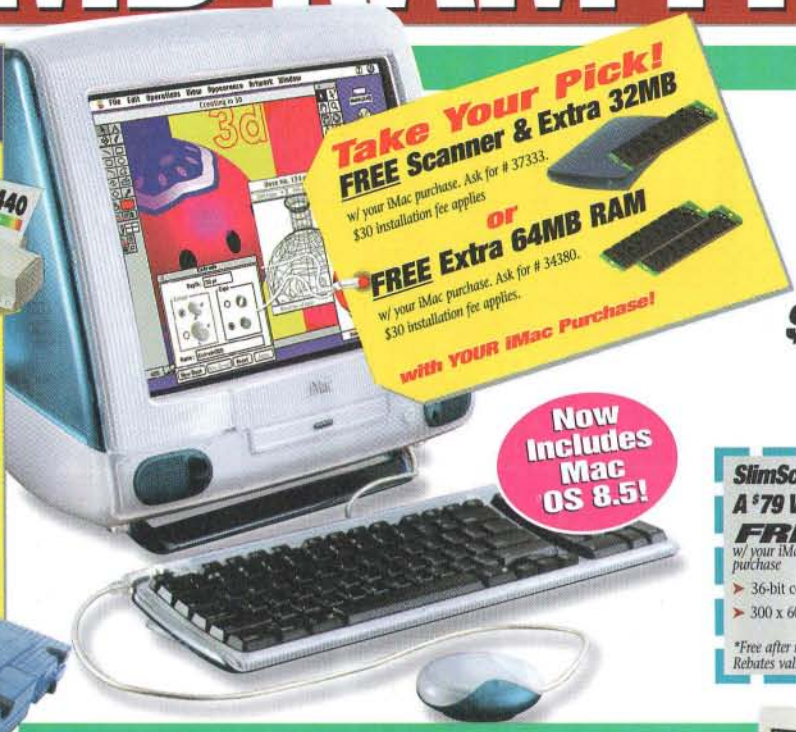

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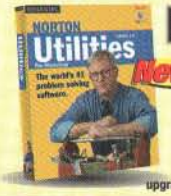

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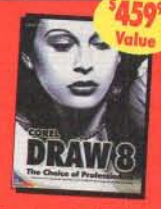

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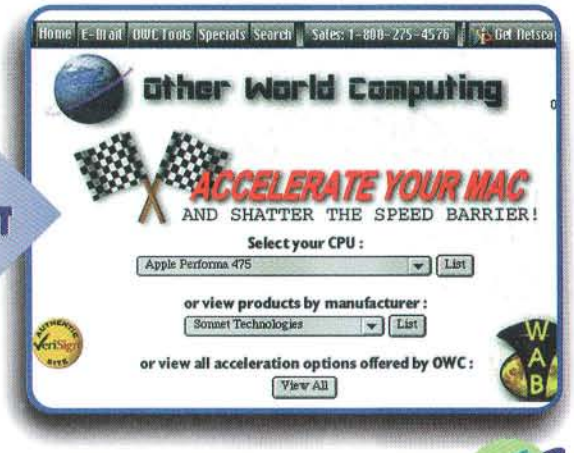

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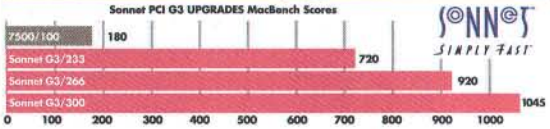

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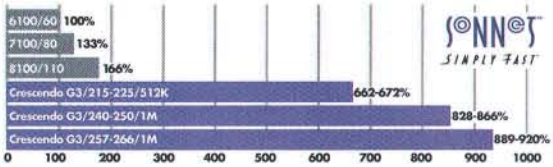

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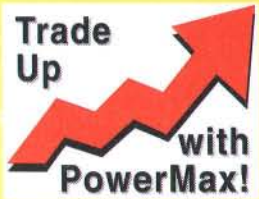

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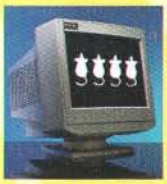

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Expression	$169
Detailer	$179
Bryce 3D	$159

MetaCreations

Adobe

Microsoft

All Software in Stock. Call for Prices.

CD Recordable

with Toast or CD Creator Software

Panasonic Int. 4x8 CD-R MAC or PC	$249
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CDR Media 74Min., 650MB

Qty. 100+	$1.09
Qty. 1000+	CALL
CD-Rewritable	$12

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YDK JACK HUGE XXXL MAC CD	$34.95
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ULTRA SCSI

					Int	Ext
2111MB	5400rpm	512K	FB32100S	3yr	$205	$265
3228MB	5400rpm	512K	FB33200S	3yr	$235	$295
4310MB	5400rpm	512K	FB34300S	3yr	$269	$329
6448MB	5400rpm	512K	FB36400S	3yr	$350	$410
8455MB	5400rpm	512K	FB38400S	3yr	$429	$489
9100MB	7200rpm	1024K	XP309100S	5yr	$519	$579
18200MB	7200rpm	1024K	XP318200S	5yr	$959	$999

ULTRA WIDE SCSI

4550MB	7200rpm	512K	VK304550W	5yr	$289	$379
9100MB	7200rpm	512K	VK309100W	5yr	$459	$549

ULTRA 2 SCSI

4550MB	7200rpm	512K	VK304550LW	5yr	$289	$389
9100MB	7200rpm	512K	VK309100LW	5yr	$459	$559
9100MB	7200rpm	1024K	XP309100LW	5yr	$519	$619
18200MB	7200rpm	1024K	XP318200LW	5yr	$959	$999

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Quantum VIKING

Quantum FIREBALL

Quantum ATLAS

MegaHaus is the first company to sell the new Quantum Approved Audio Visual drives specifically tuned to meet demanding A/V applications.

ULTRA 2 SCSI A/V (Minimum sustained 10MB/sec)

4550MB	7200rpm	512K	VK304550LV4	5yr	$319	$419
9100MB	7200rpm	512K	VK309100LV4	5yr	$489	$589
18200MB	7200rpm	1024K	XP318200LV4	5yr	$989	$1079

DLT TAPE

The professional's choice for backup. We will not be undersold on Quantum DLT Tape drives!

Native	Compressed	Internal	Table Top	Rack Mount
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35GB	70GB	$5350 DLT7000	$5625 DLT7000QX	n/a
100GB	200GB	n/a	$3879 DLT4500	$3769 DLT4500R
140GB	280GB	n/a	$5589 DLT4700	$5389 DLT4700R
280GB	560GB	n/a	$10,499 DLT4114LST	$10,199 DLT4114LSR
490GB	980GB	n/a	$13,999 DLT7114ST	$13,699 DLT7114SR

Call for Differential SCSI models, and DLTstor products. Call for the best prices in the industry on DLT media.

• CD RECORDERS •

Smart Storage Solutions CDR Drives Include:
- ✓ Toast Mastering Software
- ✓ 5 FREE disks
- ✓ Toll Free support

4x8 CDR $259

Smart STORAGE SOLUTIONS

Includes Toast & DirectCD Software!

DirectCD from Adaptec now makes a CD Recorder as easy to use as a hard drive.

Compare our price and you will see we are the #1 source for CD Recorders!

CD RECORDABLE Includes 5 Free Recordable Disks!	Internal	External
4x8 Panasonic mechanism, tray load, 1MB buffer	$259	$319
4x12 Teac mechanism, tray load, 1MB buffer	$329	$389
4x12 Plextor mechanism, caddy/tray load, 2MB buffer	$389	$449
8x20 tray load, 2MB buffer	$589	$639

PRICE BREAKTHRU

Stomper CD label kit only $39 with CD-R drive!

CD REWRITABLE Includes 5 Free ReWritable Disks!		
4x4x16 Yamaha mechanism, tray load, 2MB buffer	$389	$449
Special external with only 1 CD-RW disk (SSS4X4X16M1)		$429
CD-RW starter pack 5 CD-RW disks & 10 CD-R disks (CDSTARTER)		$60

Fargo Signature CD Printer $999	CD Duplicators Call for price.	CD Stomper label kit $49	Toast retail package $89	100 CDR-74 w/drive $120	50 CD-RW w/ drive $499

All-in-one CD Mastering

Duo Master is one of the most innovative CD mastering solutions available. The solution provides a hard drive, Jaz or Syjet drive and CDR in one unit. Create your master on the hard drive, Jaz or Syjet cartridge drive and then master directly to the CD. This is the perfect CD mastering setup! Includes 5 free recordable CDs (5 CD-RWs with CD-RW drives) and 1 free cartridge with Jaz or Syjet unit. Add these prices to the internal prices above.

Quantum 2GB (DUO2GBM) $270 Quantum 4GB (DUO4GBM) $340
Syjet 1.5GB (DUOSYJETM) $319 Jaz 2GB (DUO2GBJAZM) $399

• SCSI HARD DRIVES •

Seagate

					Internal	External
4520MB	7200rpm	512K	ST34520N	3yr	$239	$299
4550MB	7200rpm	512K	ST34573N	5yr	$439	$499
6530MB	7200rpm	512K	ST36530N	3yr	$345	$405
9140MB	7200rpm	512K	ST39140N	3yr	$459	$519
9190MB	7200rpm	1024K	ST39173N	5yr	$495	$555
18200MB	7200rpm	1024K	ST118273N	5yr	$979	$1039
ULTRA WIDE SCSI						
4520MB	7200rpm	512K	ST34520W	3yr	$249	$339
4550MB	7200rpm	512K	ST34573W	5yr	$439	$529
6530MB	7200rpm	512K	ST36530W	3yr	$345	$435
9140MB	7200rpm	512K	ST39140W	3yr	$459	$549
9190MB	7200rpm	1024K	ST39173W	5yr	$489	$579
18200MB	7200rpm	1024K	ST118273W	5yr	$979	$1069
ULTRA 2 SCSI						
4550MB	7200rpm	1024K	ST34573LW	5yr	$465	$575
4550MB	10,000rpm	1024K	ST34502LW	5yr	$520	$630
9100MB	10,000rpm	1024K	ST39102LW	5yr	$690	$800
9100MB	10,000rpm	4096K	ST39102LW4	5yr	$779	$889
9190MB	10,000rpm	1024K	ST39173LW	5yr	$529	$639
18200MB	7200rpm	1024K	ST118273LW	5yr	$989	$1099
18200MB	10,000rpm	1024K	ST118202LW	5yr	$1289	$1399
18200MB	10,000rpm	4096K	ST118202LW4	5yr	$1399	$1509

IBM

4550MB	5400rpm	512K	IBM34560N	5yr	$275	$335
9100MB	7200rpm	512K	IBM39130N	5yr	$500	$560
18200MB	7200rpm	1MB	IDGHS18Z	5yr	$959	$1019
ULTRA WIDE SCSI						
4550MB	5400rpm	512K	IBM34560W	5yr	$275	$365
9100MB	7200rpm	512K	IBM39130W	5yr	$500	$590
9100MB	10020rpm	1MB	IDVGS9U	5yr	$579	$669
18200MB	7200rpm	1MB	IDGHS18U	5yr	$969	$1059
ULTRA-2 SCSI						
9100MB	7200rpm	512K	IBM39130U2	5yr	$505	$615
18200MB	7200rpm	1MB	IDGHS18U2	5yr	$1019	$1129

New SCA Drive Enclosure - Perfect for RAID

- Holds three 1" high SCA drives.
- Drive modules are hot swappable.
- Heavy duty construction and cooling.

Enclosure with modules (SCA3CASE) $329
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			Internal	External
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32X - Tray load	Toshiba	XM6201BM/XM	$105	$165
32X - 512K buffer	Plextor	PX32TSM/XM	$145	$205
36X - Slot load	Pioneer	DRU706M/XM	$90	$150

• MISCELLANEOUS •

IOMEGA 2GB Jaz JAZ2X $339

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CD-RW PRICE DROP! • CDR MEDIA •

Nobody beats MegaHaus for CD Recordable Media prices! We will not be undersold. If by chance you do find a lower price, call us.

	CDR74	CDR74W	CDR74P
5 Pack	$21/$19	$59/$55	$28/$25
20 Pack	$42/$39	$189/$185	$65/$62
50 Pack	$93/$89	$429/$419	$139/$135
100 Pack	$159/$149	$819/$809	$259/$249
Budget 5 Pack	$19/$17	$33/$33	$24/$21
Budget 20 Pack	$36/$33	$129/$125	$55/$52
Budget 50 Pack	$74/$70	$319/$309	$119/$109
Budget 100 Pack	$139/$120	$619/$609	$189/$179

CDR74 is recordable, CDR74W is rewritable, CDR74P is printable. $ is alone/with CDR purchase. 8X certified, & Platinum now available.

• IDE HARD DRIVES •

3.5" ULTRA IDE - Call for models not listed

2564MB	Quantum	5400rpm	FB302500A	3yr	$119
3221MB	Seagate	5400rpm	ST33221A	3yr	$129
4311MB	WD	5400rpm	AC24300	3yr	$145
6448MB	WD	5400rpm	AC36400	3yr	$175
6530MB	Seagate	7200rpm	ST36530A	3yr	$199
7696MB	Quantum	5400rpm	FB307600A	3yr	$189
8606MB	Seagate	5400rpm	ST38641A	3yr	$199
9140MB	Seagate	7200rpm	ST39140A	3yr	$229
10100MB	IBM	7200rpm	IBM10GXP	3yr	$270
12750MB	Quantum	5400rpm	FB312700A	3yr	$280
14400MB	IBM	7200rpm	IBM14GXP	3yr	$405
16800MB	IBM	5400rpm	IBM16GP	3yr	$399

2.5" IDE for laptops - Call for the best price around

RAID

These preconfigured RAIDs can be run in RAID 0 or 1 mode. The capacity listed is for RAID 0 configuration. In RAID 0, the data is striped across a pair of drives. This is perfect for digital video such as Media 100, TrueVision, Avid, or other applications that require extremely high data transfer rates.

Includes - Ultra 2 LVD SCSI drives - Adaptec PCI Ultra-2 SCSI controller - Adaptec Remus Lite RAID software - Necessary cables

			Removable	Fixed
18GB	7,200rpm	2 9.1GB Quantum Viking drives	$1839	$1639
18GB	7,200rpm	2 9.1GB Quantum Atlas drives	$1959	$1759
18GB	7,200rpm	2 9.1GB Seagate Barracuda drives	$1969	$1769
18GB	10,000rpm	2 9.1GB Seagate Cheetah drives	$2289	$2089
36GB	7,200rpm	2 18GB Quantum Atlas drives	$2879	$2679
36GB	7,200rpm	2 18GB Seagate Barracuda drives	$2929	$2729
36GB	10,000rpm	2 18GB Seagate Cheetah drives	$3579	$3379

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8600/250	32/4GIG/12XCD/ZIP	CALL
8600/200	32/2GIG/12XCD/ZIP	CALL
7300/200	32/4GIG/CD	899*
6500/300	32/4GIG/CD/FAX	999*
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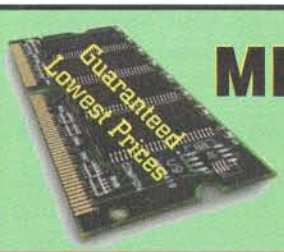

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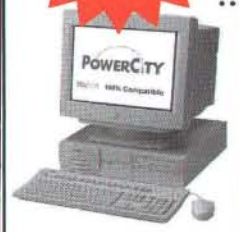

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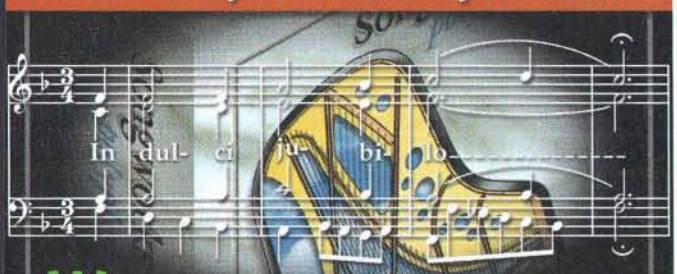

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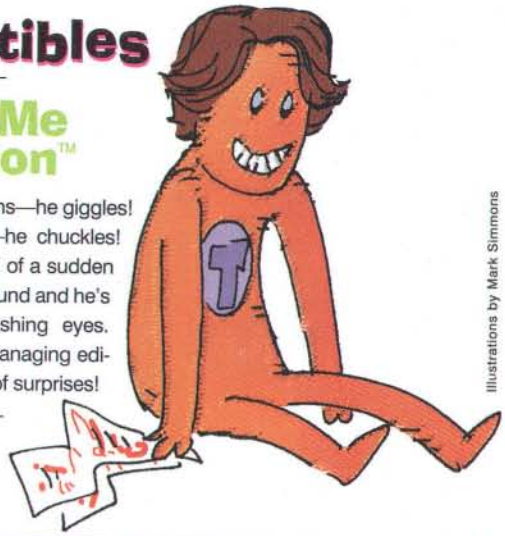

Illustrations by Mark Simmons

GRAVE CONVICTIONS

"Life is short and we're all going to die really soon. It's true, you know." Apple interim CEO Steve Jobs said in the November issue of *Fortune* magazine, right after leaking the sad and shocking news that everyone will also have to pay taxes. Really. He's not kidding.

Deadly or Dull?

Few viruses inspire the same fear as the Click of Death, which terrorized the masses with its name alone. The AutoStart Worm, however, lulled Mac users into a dangerous complacency because of its snoringly bland name. What could be even less intimidating?

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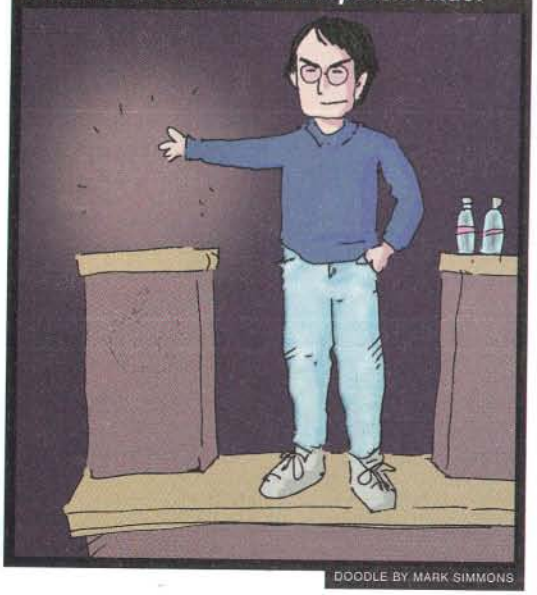
Steve Jobs wows Macworld attendees with the world's first transparent Mac!



DOODLE BY MARK SIMMONS

Top Ten Ways to Annoy Steve Jobs

10. Tell him that you're really impressed that he's worth 1/29 as much as Bill Gates.
9. Refer to *Antz* as the hands-down best bug movie of the year.
8. Call him on the phone pretending to be from *MacAddict*.
7. Proclaim beige to be this season's black.
6. Show off all the tattoos you got in thinking jail.
5. Cry when he fires you.
4. Ask him to walk your Cyberdog.
3. Demand that Apple start advertising again.
2. Get him on the phone by saying you're a reporter from *Forbes* writing a feature on the 50 most influential people in technology. Then tell him you're calling because you heard he might have Andy Grove's direct number.
1. Complain that the people in the "Think Different" ads are too obscure. Suggest using Jennifer Aniston and Courtney Cox.

Sometimes Newer Is Better Than New

Introducing the Latest Apple Desktop

So, you sprang the bucks for an Apple PowerBook G3 Series - a computer that's as comfortable on your desktop as it is on the road. Except, of course, for that #$%?&! mass of cables waiting on your desk. Not to worry. Newer Technology has created the BookEndz docking station. The easiest way to connect or disconnect a monitor, keyboard, mouse, audio in and out, network or serial printer, SCSI devices, and power in seconds flat. Snap in your G3 PowerBook and you have a world class desktop machine, snap it out and you have the ultimate portable. What else do you need?

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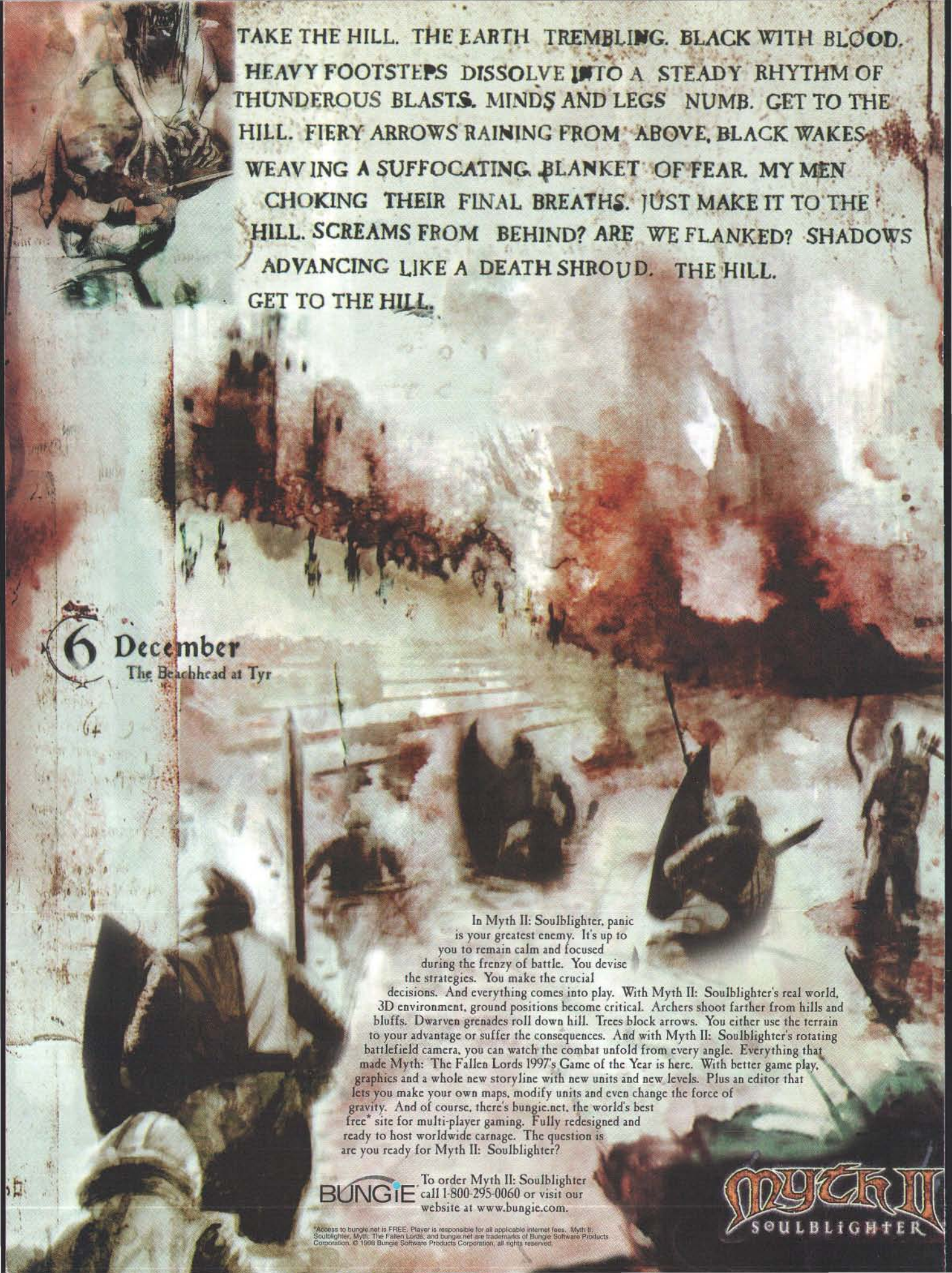
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